

ICP DAS WISE User Manual for WISE-5800 Series

[Version 1.00]



ICP DAS CO., LTD.

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1 Introduction

WISE-5800(Web Inside, Smart Engine) PAC Controller is an Intelligent Data Logger PAC designed by ICP DAS that functions as control units for use in remote logic control and monitoring in various industrial applications. WISE-5800 offers a user-friendly and intuitive HMI interface that allows users to implement control logic on controllers just a few clicks away; no programming is required. With this powerful and easy-to-use software, it will minimize the learning curve, shorten time to market and dramatically reduce the labor and cost spent on system development.

Through Web browser, users can access Web Server on WISE-5800 to perform tasks such as logic rule edition and download. WISE-5800 equips an IF-THEN-ELSE rule engine that will check whether the rules are valid or not and determine the execution of actions under specific conditions, for examples: setting up I/O channel values, perform scheduled and Timer tasks, sending Email under a specific condition. In addition, through the Modbus TCP Protocol, it enables SCADA software to control and monitor I/O channel or system status on controllers in real time.

In addition to merits inherited from the existing WISE series, WISE-5800 even provides more supports in I/O functions. It allows to connecting with a wide range of XW-Boards and I-7000 Remote I/O modules that enables users to freely choose the most suitable I/O modules. With the microSD card, it provides Data Logger function to real-time record the I/O data of the controller and send the data files by FTP or Email at a scheduled time to the control center for further administration management or data analysis.

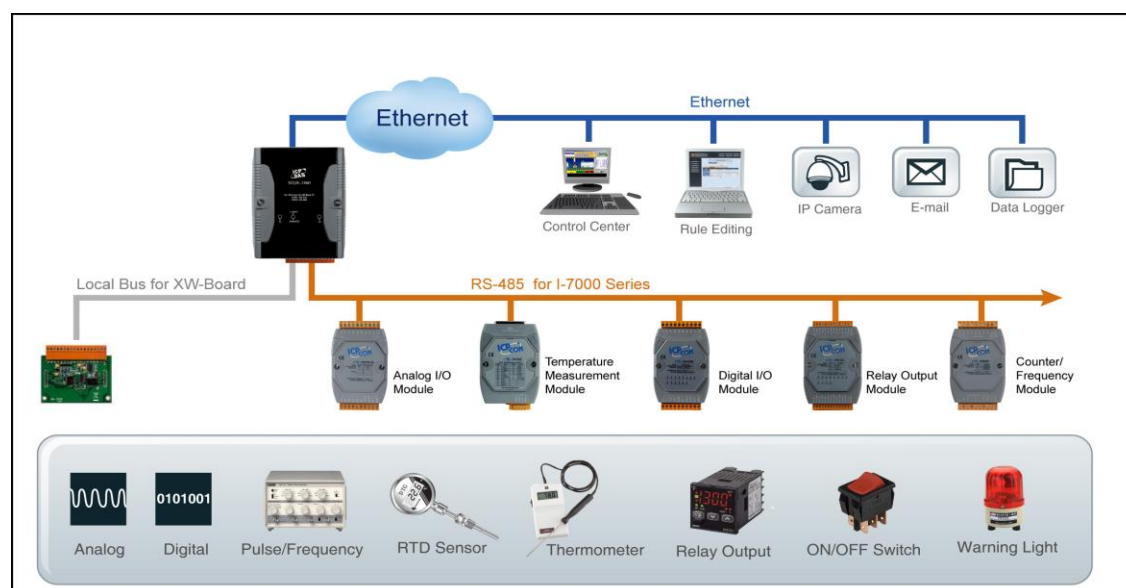


Figure 1-1 : WISE-5800 System Architecture

WISE- 5800 system features:

◆ **IF-THEN-ELSE logic rules execution ability**

WISE-5800 equips with an IF-THEN-ELSE logic Rule Engine, it offers up to 36 IF-THEN-ELSE rules for users to set up the logic content. After completing rule edition and downloading rules to the WISE controller, the Rule Engine will loop execute the rules in accordance with the execute order under specific conditions.

◆ **No programming is required to implement logic content on controllers**

WISE-5800 provides user-friendly Web UI pages for editing control logic on the controllers. It enables to implement logic edition by a few clicks on the mouse to set up and deploy logic rules without writing a single line of code.

◆ **No extra software tool is required; all operations can be done through the Web browsers**

Provides Web-based HMI interface runs on regular Web browsers. To edit control logic, it only requires a browser to connect to the Web server on WISE-5800. No extra software tool installation is needed on the target PC.

◆ **Support various I/O modules**

WISE-5800 allows to connecting with a wide range of XW-Boards and I-7000 Remote I/O modules that enable users to find best solutions to meet their requirements. Please refer to the following table for I/O modules and functions (more to come in near future):

	Functions		Modules
I-7000 Remote I/O Module	AI/AO	Voltage & Current	I-7012 、 I-7017
		Thermocouple	I-7011 、 I-7018 、 I-7019
		RTD	I-7013 、 I-7015 、 I-7033
		Thermistor	I-7005
		Transmitter	I-7014
		Analog Output	I-7021 、 I-7022 、 I-7024
	DI/DO	DC Digital Input	I-7041、I-7051、I-7052、I-7053
		AC Digital Input	I-7058 、 I-7059
		DC Digital Output	I-7042 、 I-7043 、 I-7045
		DC Digital Input & Output	I-7044 、 I-7050 、 I-7055
	Relay Output	Power Relay Output	I-7060 、 I-7061 、 I-7063 、 I-7065 、 I-7067

		Solid State Relay Output	I-7063A/B 、 I-7065A/B
		Photomos Relay Output	I-7066
	Others	Counter/Frequency	I-7080 、 I-7088
XW-Board	DI/DO		XW-107 、 XW-110 (Available Soon)
	DI/DO/AI/AO(Available Soon)		XW-304 、 XW-310

Figure 1-2 : WISE-5800 IO module support list

◆ **Provide Timer and Schedule operation**

WISE-5800 features two kinds of timing functions: Timer and Schedule. It allows user to schedule specific date or time for control logic execution, or perform specific tasks such as time delay. To ensure the accuracy of the WISE controller clock, it also has the ability to sync the clock to an SNTP time server for time synchronization through the network.

◆ **Provide Email message and CGI command sending functions**

WISE-5800 supports Email message and CGI command sending functions. Email and CGI command functions are important function for real-time message communication. The sending action can be added to the logic edition as part of logic control to provide real-time message transmission or sending CGI command for device control in response to specific events.

◆ **Recipe function for Group Action operation**

WISE-5800 provides Recipe function that allows to execute a sequence of actions previously saved in the Recipe to response to IF-THEN-ELSE logic rules Conditions. Different Recipe sets can be edited to meet various requirements for different applications.

◆ **Data Logger function**

With the microSD card, WISE-5800 provides Data Logger function to real-time record the I/O data of the controller and sends the data files by FTP or Email to the control center for further administration management or data analysis.

◆ **Real-time monitoring system status of controllers**

WISE-5800 supports Modbus TCP Protocol for users to perform real-time monitoring and control of the controllers. Please refer to Appendix 1 for the mapping table of controller system information and Modbus TCP protocol

Address. In addition, WISE provides an easy-to-view HMI web interface for real-time monitoring. It allows users to get important real time system information even without SCADA software.

◆ **Password protection for access control when download logic rules**

WISE HMI web page offers password protection; it allows users to modify the password for access control when download the logic rules.

This document is intended to give you a full-range instruction to WISE-5800 controllers. You will be able to learn how to edit logic of the rules and how to download the rules to the controllers for conditional execution.

2 Before Connection

Before connecting to WISE-5800 Web HMI pages, please complete the following steps to implement network configuration and I-7000 modules parameter settings. The procedures are as follow:

2.1 Network configuration

- ◆ Please make sure the Init Switch on the controller has been switched to “OFF” position. Connect the controller to power supply and to the network. The Init Switch position is shown as below:

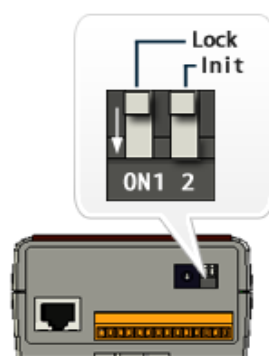


Figure 2-1 : The Init Switch on the controller

- ◆ Install and execute MiniOS7 Utility. MiniOS7 Utility can be downloaded from the following link. **Please download version v3.2.4 or later.**
http://ftp.icpdas.com/pub/cd/8000cd/napdos/minios7/utility/minios7_utility/
- ◆ On toolbar, select Connection→Search (shown as below). A “MiniOS7 Scan” window will pop up and automatically start searching controllers in the network.

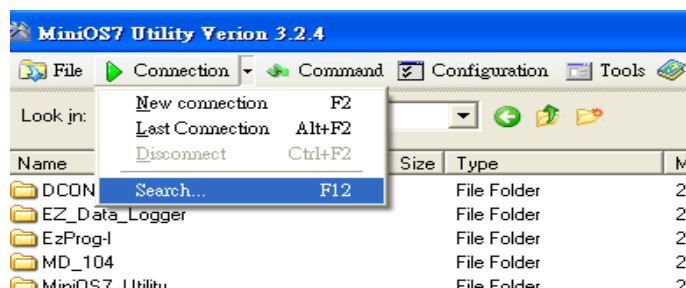


Figure 2-2 : Select “Search” function on MiniOS7 Utility

- ◆ After finish searching, find the target controller and click “TCP Broadcast”, and then click “IP Setting” button on the toolbar as shown below:

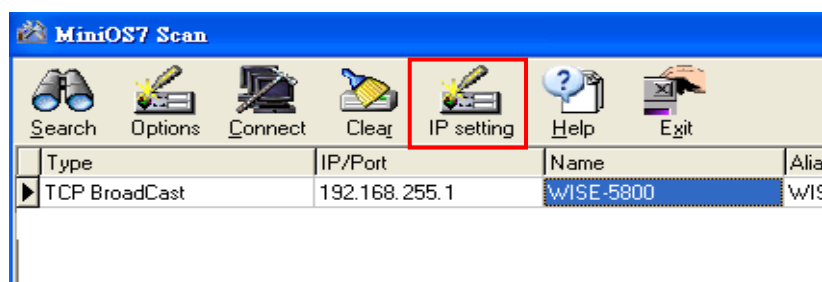


Figure 2-3 : IP Setting button on MiniOS7 Scan

- ◆ Click “IP Setting” button, a network settings window will pop up. Input the information and click the "Set" button to complete the settings.

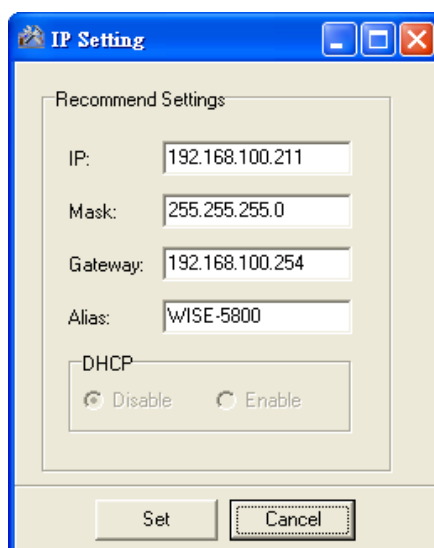


Figure 2-4 : Network Settings page

- ◆ After finish Network settings, reboot the WISE-5800 controller for the changes to take effect.

2.2 I-7000 Module Parameter Settings

To access I/O data on I-7000 Modules, it is required to complete I-7000 module parameter settings before trying to communicate with I-7000 Modules. The I-7000 module parameter settings can be done by DCON Utility.

- ◆ You can download DCON Utility from the link below:

http://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/

And you can download DCON Utility manual from the link below:

http://ftp.icpdas.com/pub/cd/8000cd/napdos/driver/dcon_utility/manual/

- ◆ Install the DCON Utility on PC and connect the I-7000 Module to the PC for parameter settings, please follow the steps below (for more detail information, please refer to DCON Utility manual):
 - i. Connect the I-7000 modules to the PC (with DCON Utility installed) via RS-485 line, make sure the RS-485 line is properly connected.

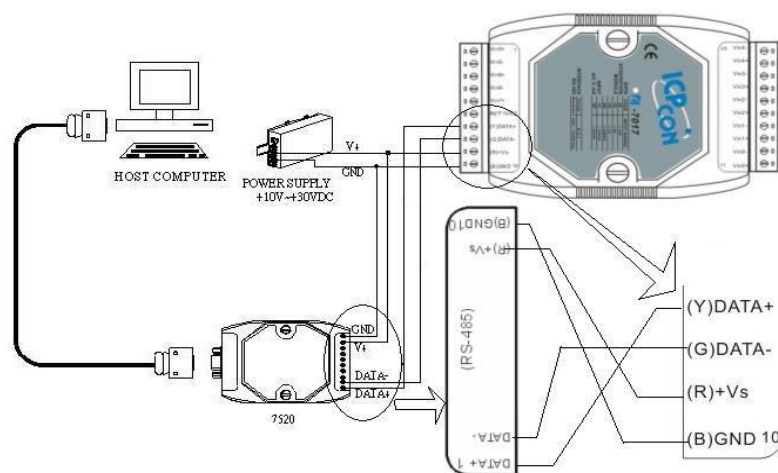


Figure 2-5 : I-7000 module connection via RS-485 line

- ii. Start the DCON Utility and verify if the COM Port value is accurate.

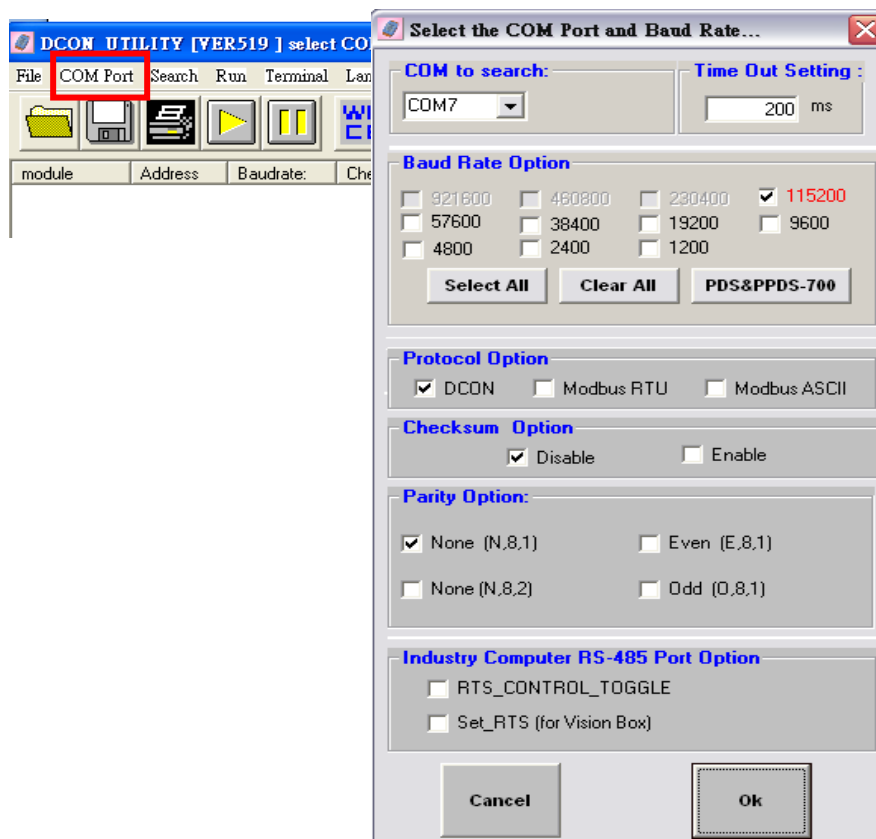


Figure 2-6 : Check COM port, Baudrate, and DCON Protocol settings

- iii. Perform “Search” to find all I-7000 modules that are connected to the PC.

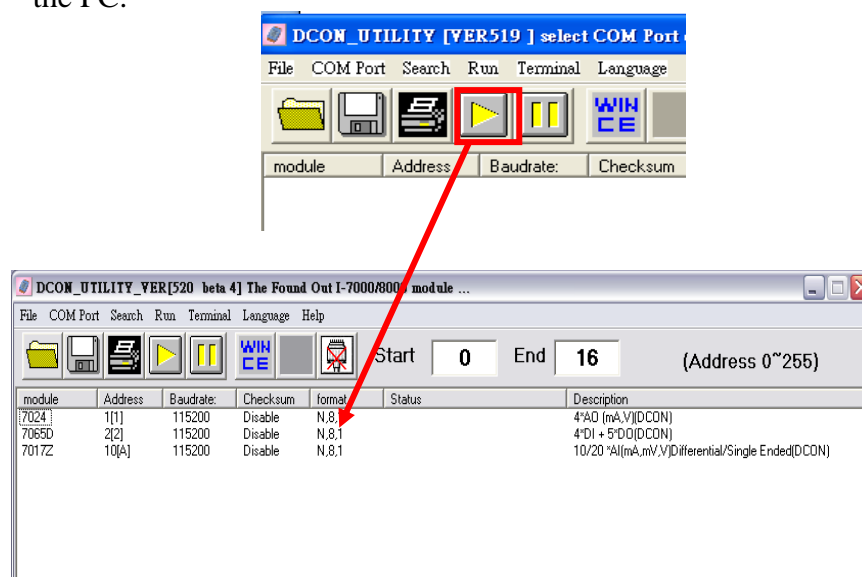


Figure 2-7 : I-7000 module Search

- iv. Click on the I-7000 module to bring up the “Configuration Window” for setting up the parameters (such as Address, Baudrate, Checksum) for the module. The “Configuration Window” will be shown as follow(I-7017Z as an example):

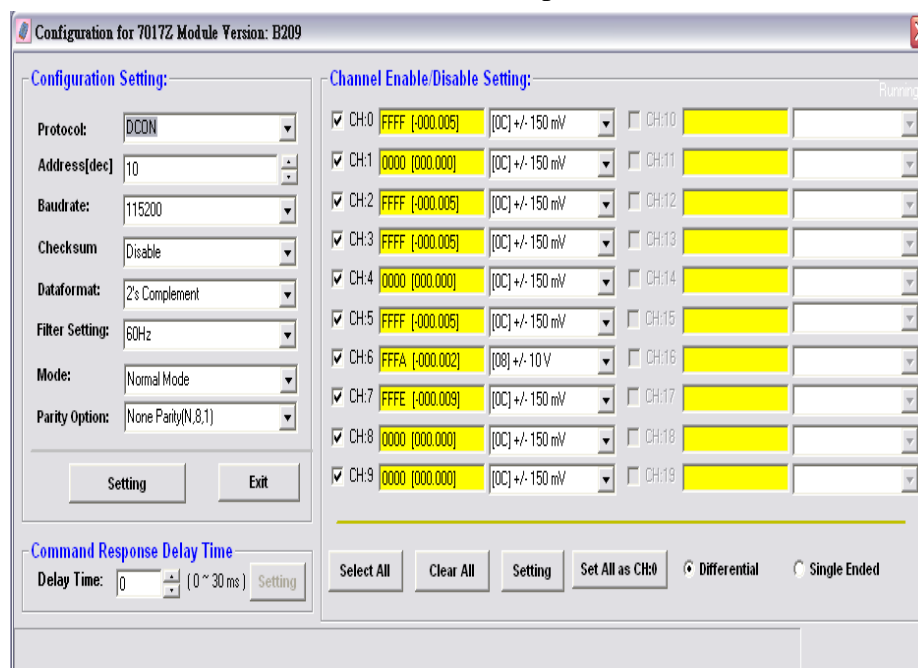


Figure 2-8 : I-7000 module configuration window

Please note: The following parameters has to be accurate to connect with WISE-5800 properly:

- Communication Protocol : has to be set as DCON ◦
- Address : the address has to be set between 1~16, please note: the configuration of I-7000 module address on WISE-5800 has to be set exactly the same.
- Baudrate : the Baudrate has to be set the same as the Baudrate of WISE-5800 COM2, all I-7000 modules' Baudrate have to be set the same as well.
- Checksum : set to be “Disable”.
- Data format : set to be “2’s Complement” (Except for I-7024, it only uses “Engineering Unit” format).
- Parity Option : set to be ”None Parity(N,8,1)” ◦

Complete the other settings as required.

3 WISE Web Page Overview

Please use IE or Firefox browser to connect to Web server on WISE-5800 controller. In order to get a better operation experience, 1280x1024 resolution is recommended. The main page of WISE-5800 controller Web page is shown as below:



Figure 3-1 : Main page of WISE-5800 Web UI

Six buttons will appear on the upper part of the Web page:

- ◆ Basic Setting
- ◆ Advanced Setting
- ◆ Rules Setting
- ◆ Channel Status
- ◆ Upload from Module
- ◆ Download to Module

The main page will display the WISE-5800 firmware version information, module information and general operating procedures.

The procedures are as follows:

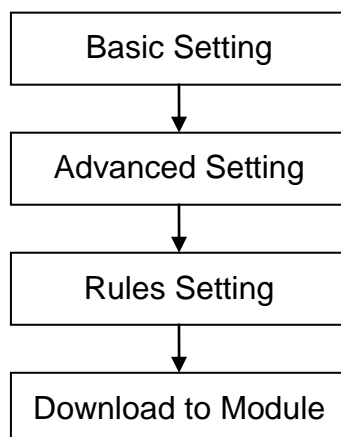


Figure 3-2 : WISE-5800 Web UI Operation Procedures

Please note: DO NOT refresh the Web page when you are editing the rules, otherwise the contents of all previous settings will be gone. And please remember all settings will take effect only when they have been downloaded to modules, if you close the Web page before finishing “Download to Module”, all settings will be disappeared as well.

In addition, there is a language selection menu on the left region of the main page. WISE Web UI offers: English, Traditional Chinese and Simplified Chinese for users to choose their prefer languages. The system will memorize previous language selection, and will automatically switch to the previously chosen language next time when connected to the WISE Web UI. **Please note: do not change the language setting during the process of rule edition; otherwise the previous edited content might disappear.** It is recommended to perform language selection at the beginning when connected to the WISE Web UI or after finishing “Download to Module”.

More detail information of each button will be given in the following parts.

4 Basic Setting

Under the Basic Setting section, users can set up Name Setting, Time Setting, Ethernet Setting, Password Setting, XW-Board Setting and I-7000 Module Setting.

4.1 Name Setting

Name Setting page is for you to give your controller a name for easy recognition and identification. Name Setting page is shown as follow:

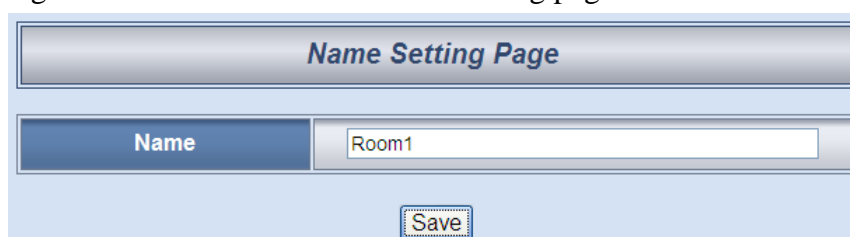
A screenshot of the 'Name Setting Page' from the WISE web interface. The page has a light blue header with the title 'Name Setting Page'. Below the header, there is a label 'Name' next to a text input field containing 'Room1'. At the bottom of the form, there is a 'Save' button.

Figure 4-1 : Name Setting page

If you have already given a name to this controller, when you get on this page, the name you previously set up will be shown on the pane. After you modify or input the name, click Save to save the name. The name you input will appear on the top of the page as shown below. **Please note: the Save button on Name Setting page is for temporary storage only, to complete the Name Setting and save the change to the controller, please finish the process of “Download to Module”.**

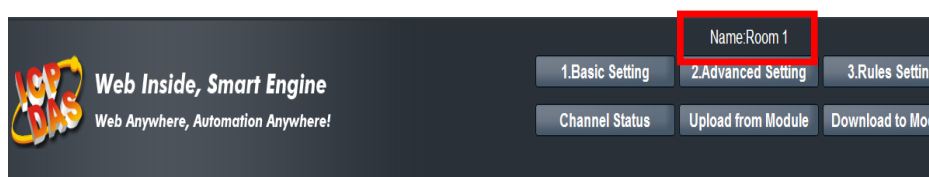


Figure 4-2 : The Name location on WISE Web Page

4.2 Time Setting

Time Setting is for setting up time on WISE controller. It also allows to set up Time Synchronization to sync the clock through network (with SNTP Time Server). The following figure illustrates the set up interface:

Time Setting Page	
Date	Year: 2011 Month: 6 Day: 8
Time	13 : 3 : 7
<input type="button" value="Save"/>	
Time Synchronization	
Sync Interval	12hr
SNTP Time Server (IP or Domain Name)	time.windows.com
Port	123
Time Zone	UTC+8
<input type="button" value="Save"/>	

Figure 4-3 : Time setting page

On every entry you make, this page will display current date and time that are read from the hardware device clock. You can remotely modify the date/time of the hardware device clock here. After you finish modification, click “Save” to save all changes to the hardware devices.

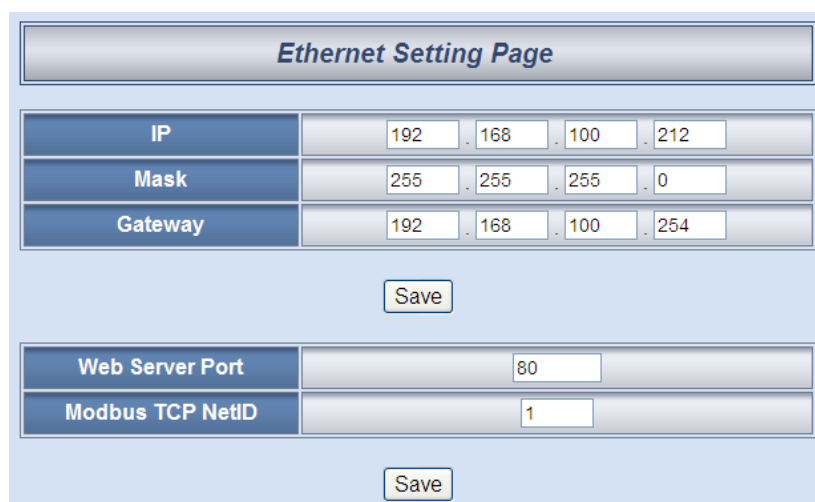
WISE-5800 also has the ability to sync the clock to an SNTP time server for time synchronization through the network. The Time Synchronization Setting is shown as follow:

- i. In the “Sync Interval” field, select the time interval to specify how often will the WISE-5800 automatically connect to SNTP time server for time synchronization through the network. If you select “disable”, it means the time synchronization function will not be performed.
- ii. In the “SNTP Time Server” field, input the IP address or domain name of the SNTP Time Server. **Please refer to the link: “time.windows.com”- this is a standard SNTP server from Microsoft for Windows operating system to synchronize the system time.**
- iii. In the “Port” field, input the port number which the SNTP time server open for connection, the default port number will be “123”.
- iv. In the “Time Zone” field, select the time zone from the dropdown list.

After all settings are completed, click “Save” button to save the changes. And please remember all settings will take effect only when they have been downloaded to modules, if you close the Web page before finishing “Download to Module”, all settings will be disappeared as well.

4.3 Ethernet Setting

Ethernet Setting allows you to perform network configuration on the controller. The following figure illustrates the configuration interface:



Ethernet Setting Page				
IP	192	168	100	212
Mask	255	255	255	0
Gateway	192	168	100	254
<input type="button" value="Save"/>				
Web Server Port	80			
Modbus TCP NetID	1			
<input type="button" value="Save"/>				

Figure 4-4 : Ethernet setting page

Each time when you enter this page, it will display current network configuration automatically read from the hardware devices. You can modify IP/Mask/Gateway configuration of the hardware devices in this section. After you finish modification, click “Save” and then all changes will be saved and written back to the hardware. You can also modify the web server port and the Modbus TCP NetID in the same way.

Please note: if you make any modification to the network configuration, the hardware device will reboot itself and re-connect to the web page automatically about 5 seconds later.

4.4 Password Setting

Password Setting allows users to change the password and password hint for access controller when download logic rules. The Password Setting page is as follow:



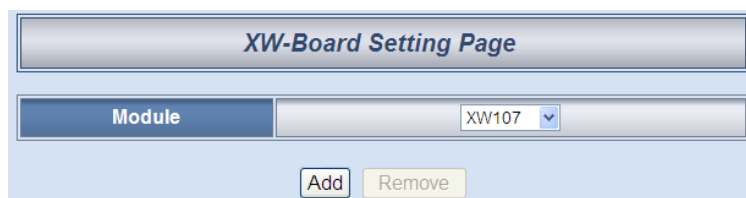
Password Setting Page	
Old Password	<input type="text"/>
New Password	<input type="text"/>
Confirm New Password	<input type="text"/>
Hint	<input type="text" value="wise"/>

Figure 4-5 : Password setting page

To avoid unauthorized access and altering of data; it is required for users to input password before they start to download control logic to the controllers. **The default password for access control is set as “wise”.** You can modify the password and password hint on this page. Password length is limited to 16 characters and the password hint length is limited to 20 characters.

4.5 XW-Board Setting

XW-Board Setting page allows users to set up the configuration of XW-Boards that connects to the WISE-5800 and function as I/O control interface. The XW-Board Setting is shown as follow:



XW-Board Setting Page	
Module	<input type="text" value="XW107"/>

Figure 4-6 : XW-Board setting page

Select the XW-Board you are using from the drop down list and click “Add”, a window for setting up XW-Board channel parameters will appear. Complete the settings for each XW-Board channel.

Please note: after you complete all configuration for XW-Board DI, DO, AI and AO channels, remember to click “Save” to save the settings.

Please note: WISE-5800 allows to connect with one XW-Board only, however; it allows to connect I-7000 modules via RS-485 interface through COM2 at the same time when connecting to the XW-Board.

4.5.1 XW-Board DI Channel Settings

The XW-Board DI Channel Setting page is shown as follow (using XW107 as an example):

Channel	Ch.0	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Counter Type	Disable	Disable	Disable	Disable	Disable	Disable	Disable	Disable
Counter Initial Value	0	0	0	0	0	0	0	0

Figure 4-7 : XW-Board DI attribute setting page

The settings are as follow:

- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- Counter Type : Specify the counter type to be Falling edge detection (ON-to-OFF) or Rising edge detection (OFF-to-ON); if you select “Disable” indicates that the counter of this DI channel will not function.
- Counter Initial Value : You can set the initial value of the counter in the “Counter Initial Value” field. This counter will start counting from the initial count value. The default initial value is 0.

After all DI channel settings are completed, click “Save” button to save the changes.

4.5.2 XW-Board DO Channel Settings

The XW-Board DO Channel Setting page is shown as follow (using XW107 as an example):

XW-Board Setting Page

Module: XW107

Add Remove

Channel	Ch.0	Ch.1	Ch.2	Ch.3
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Power On Value	OFF	OFF	OFF	OFF
Enable Pulse Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pulse High (10ms)	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Pulse Low (10ms)	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Channel	Ch.4	Ch.5	Ch.6	Ch.7
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Power On Value	OFF	OFF	OFF	OFF
Enable Pulse Output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pulse High (10ms)	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Pulse Low (10ms)	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Figure 4-8 : XW-Board DO attribute setting page

The settings are as follow:

- Nickname: for users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- You can specify the initial status to be “ON” or to be “OFF” when the WISE-5800 is power on. Select the value from the dropdown list of “Power On Value” field. The default value is “OFF”.
- If you check the Enable pulse output checkbox, it will allow this DO channel to perform pulse output and form a periodic pulse cycle. In Pulse Output mode, the selected DO channel will generate a square wave according to specified parameters (Pulse High and Pulse Low). Pulse High and Pulse Low are required and has to be entered in multiples of 10ms. Pulse High indicates the “ON” time duration and Pulse Low indicates the “OFF” time duration in a periodic Pulse cycle.

After all DO channel settings are completed, click “Save” button to save the changes.

Please note: the DO channel of XW-Board does not offer Counter function.

4.5.3 XW-Board AI Channel Settings

The XW-Board AI Channel Setting page is shown as follow (using XW304 as an example):

XW-Board Setting Page

Module: XW304

Add Remove

	DI Attribute		DO Attribute		AI Attribute		AO Attribute	
Channel	Ch.0	Ch.1	Ch.2	Ch.3	Ch.4	Ch.5		
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		
Deadband	<input type="text" value="0"/> (0 V ~ 5 V)	<input type="text" value="0"/> (0 V ~ 5 V)	<input type="text" value="0"/> (0 V ~ 5 V)	<input type="text" value="0"/> (0 V ~ 5 V)	<input type="text" value="0"/> (0 V ~ 5 V)	<input type="text" value="0"/> (0 V ~ 5 V)		
Scale	MIN <input type="text" value="0"/> MAX <input type="text" value="0"/>	MIN <input type="text" value="0"/> MAX <input type="text" value="0"/>	MIN <input type="text" value="0"/> MAX <input type="text" value="0"/>	MIN <input type="text" value="0"/> MAX <input type="text" value="0"/>	MIN <input type="text" value="0"/> MAX <input type="text" value="0"/>	MIN <input type="text" value="0"/> MAX <input type="text" value="0"/>		

Save

Figure 4-9 : XW-Board AI attribute setting page

The settings are as follow:

- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- In the “Scale” field, AI channel raw data can be set to operate with linear proportion between “MIN” and “MAX” values. The IF Condition will use the adjusted value in the logic Rule operation, and the AI value retrieved from Modbus TCP and “Channel Status” page would be the adjusted value. The default value for MAX and MIN is 0, it means the Scale function is disabled.
- Deadband : In order to avoid signal oscillation that may result in instability to the status changes, the user can set up a Deadband value for the AI channel to reduce the oscillation effect to the channel value. The AI attribute configuration page is shown as below:

There are three operation styles for AI Deadband. Detail description is as below. The AI Channel setting in following examples is 0mA ~ 20mA.

(a) In the IF Condition, when $AI > \text{or } \geq$ a numerical value :

Assuming the Deadband value is set to be 2 mA, and the following statements are defined in the related logic Rule: IF $AI0 > 10\text{mA}$, THEN $DO = \text{ON}$, ELSE $DO = \text{OFF}$, that means, when $AI0$ receives a signal that exceed 10mA, the DO channel will change to ON immediately, however, when the $AI0$ channel value drops and becomes lower than 10mA, the DO channel will not change back to OFF immediately until the value reaches 8mA (10mA minus the

Deadband value 2mA), as shown in following figure.

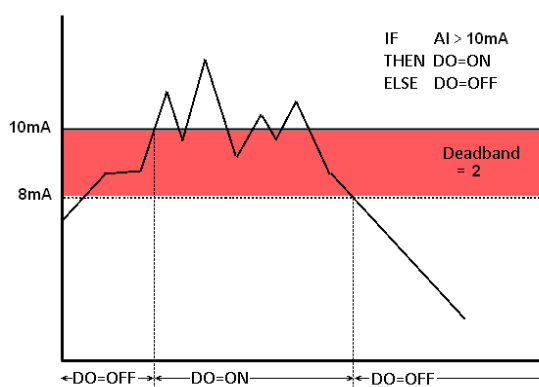


Figure 4-10 : AI Deadband Operation(> or >= a numerical value)

(b) In the IF Condition, when AI < or <= a numerical value:

Assuming the Deadband value is set to be 2 mA, and the following statements are defined in the related logic Rule: IF AI0<10mA, THEN DO=ON, ELSE DO=OFF, that means, when AI0 receives a signal which is lower than 10mA, the DO channel will change to ON immediately, however, when the AI0 channel value exceed 10mA, the DO channel will not change back to OFF immediately until the value reaches 12mA (10mA plus the Deadband value 2mA), as shown in following figure.

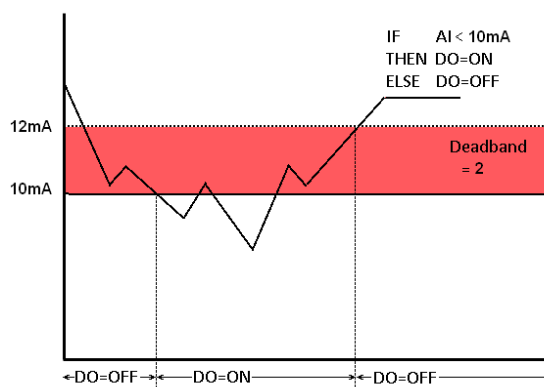


Figure 4-11 : AI Deadband Operation(< or <= a numerical value)

(c) In the IF Condition, when AI = a numerical value:

Assuming the Deadband value is set to be 1 mA, and the following statements are defined in the related logic Rule: IF AI0 = 9mA, THEN DO=ON, ELSE DO=OFF, that means, when AI0 receives a signal between 8mA (9mA minus the deadband value 1mA) and 10mA (9mA plus the deadband value 1mA), the DO channel will

change to ON immediately. However, when the AI0 channel value exceed 10mA, or is lower than 8mA, the DO channel will change to OFF, as shown in following figure.

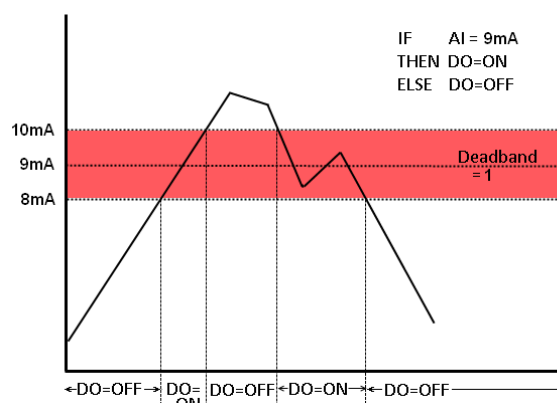


Figure 4-12 : AI Deadband Operation(= a numerical value)

After all AI channel settings are completed, click “Save” button to save the changes.

4.5.4 XW-Board AO Channel Settings

The XW-Board AO Channel Setting page is shown as follow (using XW304 as an example):

XW-Board Setting Page

Module: XW304

Add Remove

DI Attribute DO Attribute AI Attribute **AO Attribute**

Channel	Ch.0
Nickname	
Power On Value	0 (-5 V ~ 5 V)

Save

Figure 4-13 : XW-Board AO attribute setting page

The settings are as follow:

- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- You can set the initial value of the AO channel in the “Power On Value” field. WISE-5800 will output this value for the AO channel when is power on. The default initial value is 0.

After all AO channel settings are completed, click “Save” button to

save the changes.

4.6 I-7000 Modules Setting

I-7000 Modules Setting page allows users to select the module types of the I-7000 modules connecting to the WISE-5800 via COM2 and enables to set up the configuration for each individual I-7000 module. Each WISE-5800 controller allows to connecting to up to 16 I-7000 modules. The I-7000 Modules Setting page is shown as below:

I-7000 Module Setting Page								
Baudrate(COM2)		9600 bps						
Auto Search		Scan						
Module		I-7005						
Type		I-7005						
Address		1						
Polling Timeout		300 milliseconds						
Add								
I-7000 Module List of COM2								
<input type="checkbox"/>	Address	Module	DI	DO	AI	AO	Polling Timeout	Setting
No I-7000 Module Exist.								
Save								

Figure 4-14 : I-7000 module setting page

Follow the following steps:

- In the “Baudrate” field, select the WISE-5800 COM2 data transmission rate from the drop down list.
- In the “Auto Search” field, click on “Scan” button to search the I-7000 modules that are connected to the controller via COM2.
Please note: to ensure a proper connection, make sure when you use DCON Utility to set up the Baudrate for each I-7000 module, the Baudrate has to be set the same as WISE-5800 Baudrate (as previous setup in step i) .
- In addition to “Auto Search”, the users can add the I-7000 module

one by one; complete “Module”, “Type”, “Address” and “Polling Time” field and then click “Add” button to add a new I-7000 module. An example of the I-7000 module list is shown as below:

I-7000 Module Setting Page

Baudrate(COM2): 1200 bps

Auto Search: Scan

Module: I-7067

Type: I-7067, I-7067D

Address: 6

Polling Timeout: 300 milliseconds

Add

I-7000 Module List of COM2

Address	Module	DI	DO	AI	AO	Polling Timeout	Setting
1	I-7018	0	0	8	0	300	Edit
2	I-7024	0	0	0	4	300	Edit
3	I-7044	4	8	0	0	300	Edit
4	I-7052	8	0	0	0	300	Edit
5	I-7067	0	7	0	0	300	Edit

Remove

Save

Figure 4-15 : I-7000 modules list

- Click on “Edit” button of each I-7000 module to edit detailed parameters for each module. To remove the I-7000 module, select the module you would like to remove and click “Remove” button to remove the specific module.
- After all I-7000 module settings are completed, click “Save” button to save the changes

Please refer to the following sections for more detail on I-7000 module DI, DO, AI and AO channel configurations.

Please note: currently WISE-5800 only connect to I-7000 via COM2, please make sure if the I-7000 modules are connected to WISE-5800 COM2.

4.6.1 I-7000 module DI channel setting

The I-7000 module DI Channel Setting page is shown as follow (using I-7052 as an example):

The screenshot shows the 'I-7052 Module Setting' window. At the top, there are fields for 'Address' (set to 5) and 'Polling Timeout' (set to 500 milliseconds). Below this is a section titled 'DI Attribute' with a table for configuring 8 channels (Ch.0 to Ch.7). Each channel has a 'Nickname' field and a 'Reset Counter When Power On' checkbox. A 'Save' button is located at the bottom right of the table.

Channel	Ch.0	Ch.1	Ch.2	Ch.3
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Reset Counter When Power On	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Channel	Ch.4	Ch.5	Ch.6	Ch.7
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Reset Counter When Power On	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 4-16 : I-7000 module DI attribute setting page

The settings are as follow:

- Polling Timeout : The time for WISE-5800 to send command to the I-7000 module and wait for the response, the unit will be ms.
- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- Reset Counter When Power On : When the “Reset Counter When Power On” is selected, it means the system will reset the DI counter of this I-7000 module to the default value when WISE-5800 power on.

After all DI channel settings are completed, click “Save” button to save the changes.

Please note: the DI channel counter of I-7000 module is counting by default Falling edge detection (ON-to-OFF), if you would like to select other counting type, please use DCON Utility to set up the counting type.

4.6.2 I-7000 module DO channel setting

I-7000 module DO Channel Setting page is shown as follow (using

I-7060 as an example):

I-7060 Module Setting				
Address	4			
Polling Timeout	500 millisecond			
DI Attribute DO Attribute				
Channel	Ch.0	Ch.1	Ch.2	Ch.3
Nickname				
Save				

Figure 4-17 : I-7000 module DO attribute setting page

The settings are as follow:

- Polling Timeout : The time for WISE-5800 to send command to the I-7000 module and wait for the response, the unit will be ms.
- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.

After all DO channel settings are completed, click “Save” button to save the changes.

Please note:

1. To setup the Power On Value on DO channel for each I-7000 module, please use the DCON Utility to setup the value.
2. The DO channels on I-7000 modules do not provide Pulse Output function.
3. The DO channels on I-7000 modules do not provide Counter function.

4.6.3 I-7000 module AI channel setting

I-7000 module AI Channel Setting page is shown as follow (using I-7018 as an example):

I-7018 Module Setting				
Address	6			
Polling Timeout	500 millisecond			
Unit of temperature	<input checked="" type="radio"/> Celsius(°C) <input type="radio"/> Fahrenheit(°F)			
AI Attribute				
Channel	Nickname	Type	Deadband	Scale
Ch.0		-15 mV ~ 15 mV	0 (0 mV ~ 15 mV)	MIN 0 MAX 0
Ch.1		-15 mV ~ 15 mV	0 (0 mV ~ 15 mV)	MIN 0 MAX 0
Ch.2		-15 mV ~ 15 mV	0 (0 mV ~ 15 mV)	MIN 0 MAX 0
Ch.3		-15 mV ~ 15 mV	0 (0 mV ~ 15 mV)	MIN 0 MAX 0
Ch.4		-15 mV ~ 15 mV	0 (0 mV ~ 15 mV)	MIN 0 MAX 0
Ch.5		-15 mV ~ 15 mV	0 (0 mV ~ 15 mV)	MIN 0 MAX 0

Figure 4-18 : I-7000 module AI attribute setting page

The settings are as follow:

- Polling Timeout : The time for WISE-5800 to send command to the I-7000 module and wait for the response, the unit will be ms.
- Temperature Unit : Specify temperature measurement unit for modules that allows for temperature measurement, such as I-7005, I-7011, I-7013, I-7015, I-7018 and I-7019, the temperature units can be set as degree Celsius or degree Fahrenheit.
- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- Type : Select the appropriate AI signal input type.
- Deadband : Please refer to section 4.8 XW-Board AI channel settings for “Deadband” settings.
- Scale : Please refer to section 4.8 XW-Board AI channel settings for “Scale” settings.

After all AI channel settings are completed, click “Save” button to save the changes.

4.6.4 I-7000 module AO channel setting

I-7000 module AO Channel Setting page is shown as follow (using I-7024 as an example):

I-7024 Module Setting				
Address		2		
Polling Timeout		500 millisecond		
AO Attribute				
Channel	Ch.0	Ch.1	Ch.2	Ch.3
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Type	0 ~ 20 mA	0 ~ 20 mA	0 ~ 20 mA	0 ~ 20 mA
<input type="button" value="Save"/>				

Figure 4-19 : I-7000 module AO attribute setting page

The settings are as follow:

- Polling Timeout : The time for WISE-5800 to send command to the I-7000 module and wait for the response, the unit will be ms.
- Nickname : For users to define nicknames for each I/O channel, this nickname will be displayed on the “Channel Status” page.
- Type : Select the appropriate AO signal output type.

After all AO channel settings are completed, click “Save” button to save the changes.

Please note: please use DCON Utility to set up the Power On Value for each AO channel on I-7000 modules.

5 Advanced Setting

Advanced Setting provides additional features and allows you to perform more setting on hardware devices. Click the Advanced Setting button, a column of buttons will appear on the left of the page:

- ◆ Internal Register Setting
- ◆ Timer Setting
- ◆ Schedule Setting
- ◆ Email Setting
- ◆ CGI Setting
- ◆ Recipe Setting
- ◆ Data Logger Setting

Please note: In order to avoid possible error when performing rule definition (IF-THEN-ELSE), please always finish configuration in Advanced Setting before starting to define Rules. Avoid unnecessary change in Advanced Setting after you finish rule definition. Unexpected errors might occur if you violate this sequence: Advanced Setting→ Rule Setting. In case you make any modification, please double check your settings and Rules definition to make sure no errors are present.

The following sections will describe more detail information for these configurations.

5.1 Internal Register Setting

WISE provides 48 Internal Registers; they can be used to hold temporary variables and to read/write data via Modbus address. The configuration page is shown as follow. The settings are as following steps:

- i. A checkbox appears in front of each Internal Register; check the checkbox to enable the Internal Register. Input a value if you want to set a default value for the Internal Register, and set the nicknames for the Internal Register, this nickname will be displayed on the “Channel Status” page.
- ii. After you finish all the Internal Registers selections and settings, click “Save” button to save the settings.

Internal Register Setting Page						
Enable	■ No.01	■ No.02	■ No.03	■ No.04	■ No.05	■ No.06
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Initial value	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Enable	■ No.07	■ No.08	■ No.09	■ No.10	■ No.11	■ No.12
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Initial value	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Enable	■ No.13	■ No.14	■ No.15	■ No.16	■ No.17	■ No.18
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Initial value	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Enable	■ No.19	■ No.20	■ No.21	■ No.22	■ No.23	■ No.24
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Initial value	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Enable	■ No.25	■ No.26	■ No.27	■ No.28	■ No.29	■ No.30
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Initial value	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Enable	■ No.31	■ No.32	■ No.33	■ No.34	■ No.35	■ No.36
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Initial value	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Enable	■ No.37	■ No.38	■ No.39	■ No.40	■ No.41	■ No.42
Nickname	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 5-1 : Internal Register setting page

5.2 Timer Setting

WISE provides 12 groups Timer for timing functions. The Timer status can be “Not Timeout” or “Timeout”. They can be included in the IF Condition statements. The Timer Action can be “Start” or “Reset”. The Start Action will start to run the Timer and if the Start Action is triggered one more time when the Timer is running, the Timer will restart again. The Reset action will reset the Timer and stop running the Timer. The Timer will be in “Timeout” status only when the Timer is running and reached the setting time, otherwise, the status of Timer will remain in “Not Timeout”. The Timer setting interface is shown as below:

Timer Setting Page	
Timer Amount	<input type="text" value="0"/> <input type="button" value="v"/>
Index	<input type="text" value="1"/> <input type="button" value="v"/>
Period	<input type="text" value="0"/> Sec
Initial Status	<input type="text" value="Stop"/> <input type="button" value="v"/>
<input type="button" value="Save"/>	

Figure 5-2 : Timer setting page

Follow the following steps:

- i. “Timer Amount” field is required. Select the total number of timer you are going to use from the dropdown list.
- ii. Specify the timer you want to set up by selecting its index number from the dropdown list of the “Index” field.
- iii. “Period” field is required for each timer; please input the period interval in units of seconds.
- iv. Specify the initial status of each timer from the dropdown list of the “Initial Status” field. Select “Start” indicates the timer will start to count as soon as the hardware device is power up. “Stop” indicates the Timer will remain off when the hardware device is power up; it will not be activated until being triggered under certain conditions. The default setting of initial Status is “Stop”.
- v. Repeat steps ii ~ iv. After all timer settings are completed, click “Save” button to save the changes.

5.3 Schedule Setting

WISE provides 12 groups of Schedules to setup prescheduled routine tasks. The status of Schedule function can be “In Range” or “Out of Range”, they can be included in the IF Condition statements. The Action of Schedule can be “Enable” or “Disable”. **Please note, if the Schedule is disabled, the status will be “Out of Range”.** Schedule setting page is shown as below:

The screenshot shows the 'Schedule Setting Page' interface. It includes a title bar, a 'Schedule Amount' dropdown menu (set to 0), an 'Index' dropdown menu, an 'Initial Status' dropdown menu (set to 'Stop'), a 'Date' field with a calendar icon, and a 'Time' field with a time range selector. Below these fields are four buttons: 'Clear All', 'Mark All', 'Weekday', and 'Weekend'. To the right of these buttons are two status indicators: a yellow box labeled 'In Range' and a red box labeled 'Out of Range'. A 'Save' button is located at the bottom center of the page.

Figure 5-3 : Schedule setting page

Follow the following steps:

- i. Select the total number of schedule you are going to use from the dropdown list of the “Schedule Amount” field.
- ii. Specify the schedule you want to set up by selecting its index number from the dropdown list of the “Index” field.
- iii. Specify the initial status of each schedule from the dropdown list of the “Initial Status” field. “Start” indicates the schedule will be activated as soon as the hardware device is power up. “Stop” indicates the schedule will remain inactive when the hardware device is power up, it will not be activated until being triggered under certain conditions.
- iv. Set up the Year and Month for this Schedule execution duration. After you specify the Year and Month in the Date section, the calendars corresponding to the Year and Month you specified will appear as shown below:

Schedule Setting Page

Schedule Amount

1 ▾

Index

1 ▾

Initial Status

Start ▾

Date

2011 ▾ 5 ▾ ~ 2011 ▾ 7 ▾

Time

8 ▾ 30 ▾ 0 ▾ ~ 17 ▾ 30 ▾ 0 ▾

Clear All

Mark All

: In Range

Weekend

: Out of Range

2011 / 5							2011 / 6							2011 / 7							
Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	
1	2	3	4	5	6	7				1	2	3	4							1	2
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9	
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16	
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23	
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30	
														31							

Figure 5-4 : Schedule Calendar setting page

- v. Input the schedule “In Range” time. If you specify an end time that is earlier than the start time, such as 20:00:00 ~ 06:00:00, it indicates the end time will be set one day after the start date.
- vi. On the calendars, click to toggle highlight on the dates you’d like to execute or not execute the operations for this Schedule. **If the date shows a yellow background, it indicates the date is “In Range”, that is, that date falls into the range that will execute the operations. On the contrary, if the date shows a red background, it indicates that date is “Out of Range”, that is, that date falls out of the range and will not execute the operations.** By default, all dates will be “In Range”, that is, during the date range you select, the operation will be executed every day. **Clear All** button is used to reset all dates to be “In Range”; whereas **Mark All** button is for marking all dates to be “Out of Range”. The **Weekday** button is for you to select all Mondays to Fridays to be “In Range”, and Saturdays and Sundays to be “Out of Range”, that is, the operations will be executed during weekdays only. On the contrary, the **Weekend** button is for you to set all Saturdays and Sundays to be “In Range”, and all Mondays to Fridays to be “Out of Range”, that is, the operations will be executed during weekends only.
- vii. Repeat steps ii ~ vi. After all schedule settings are completed, click “Save” button to save the changes.

5.4 Email Setting

WISE supports up to 12 Email messages. This function allows sending pre-input Email message(s) to pre-set Email receiver(s) under certain conditions. The configuration page is shown as below:

E-mail Setting Page	
E-mail Amount	1
Index	1
SMTP Server IP (IP or Domain Name)	192.168.100.33
■ Authentication	
Login ID	
Password	
Sender Name	Andy
Sender Email Address	andy@icpdas.com
1st Receiver Email Address	alan@icpdas.com
2nd Receiver Email Address	
3rd Receiver Email Address	
4th Receiver Email Address	
5th Receiver Email Address	
Subject	The temperature report
Content (Note: The length of the message cannot exceed 160 characters.)	The AI0 value is \$m2ai6 currently. AI 2-I-7018 Ch. 6 Add
Save	

Figure 5-5 : Email setting page

Follow the following steps:

- Specify the numbers of email messages you want to set up from the dropdown list of the “E-mail Amount” field.
- Specify the email group number from the dropdown list of the “Index” field.
- Enter the IP or the domain name of the SMTP server in the “SMTP

- Server” field.
- iv. If SMTP server requires account and password validation, please select the Authentication Checkbox, and continue steps v~vi to login into the SMTP server. If SMTP server don't need account and password validation, uncheck the Authentication Checkbox and skip steps v~vi, go directly to step vii.
 - v. Enter the SMTP server login ID in the “Login ID” field.
 - vi. Enter the SMTP server password in the “Password” field.
 - vii. Enter the sender's name in the “Sender Name” field.
 - viii. Enter the sender's email address in the “Sender Email Address” field.
 - ix. Enter the receiver's email address in the “1st ~5th Receiver Email address” field. **Please note: you can input up to 5 receivers, at least one email address has to be entered. Please enter the email address in sequence to avoid possible error.**
 - x. Enter the email subject in the “Subject” field.
 - xi. Enter the content in the “Content” field. The length of the content cannot exceed **160 characters**. In addition, Email provides an encoded string that allow user to add current channel value into Email content. The syntax is shown as below:

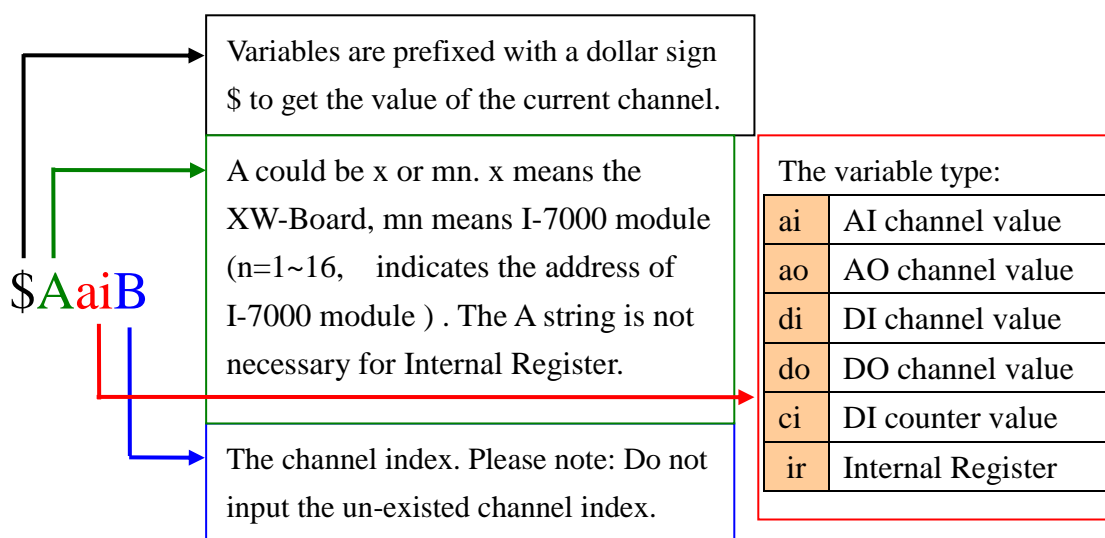


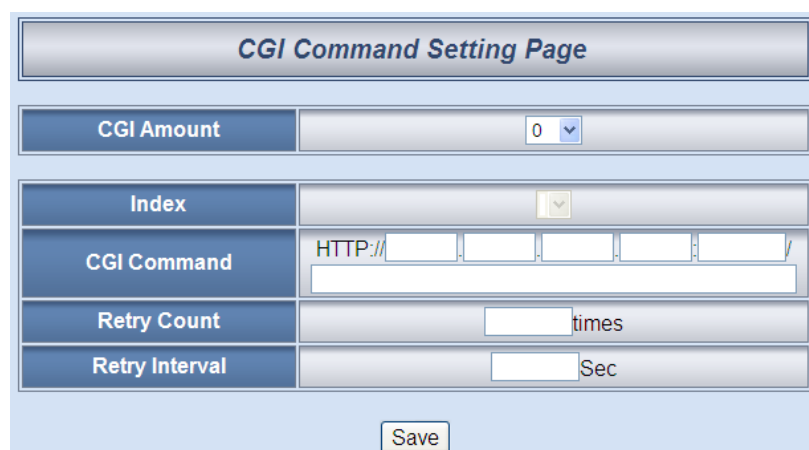
Figure 5-6 : Email channel value encoded syntax

The user can also add channel value encoded string into Email content from the I/O channel selection interface.

- xii. Repeat steps ii ~ xi. After all email groups settings are completed, click “Save” button to save the changes.

5.5 CGI Command Setting

WISE offers up to 12 sets of CGI Command setting. This function allows sending pre-input CGI Command to pre-set Remote Server device under certain conditions. The configuration page is shown as below:



CGI Command Setting Page	
CGI Amount	0
Index	
CGI Command	HTTP://
Retry Count	
Retry Interval	
Save	

Figure 5-7 : CGI Command setting page

Follow the following steps:

- Specify the numbers of CGI Commands you want to set up from the dropdown list of the “CGI Amount” field.
- Specify the CGI group number from the dropdown list of the “Index” field.
- Enter the Remote Server IP, Port number and CGI Command in the “CGI Command” field.
- Enter the number in the “Retry Count” field. It means the retry number WISE will try when it can’t connect with Remote Server device.
- Enter the number in the “Retry Interval” field. It means the time interval between each retry connection. The unit is Second.
- Repeat steps ii ~ v. After all CGI groups settings are completed, click “Save” button to save the changes.

5.6 Recipe Setting

WISE offers up to 12 sets of Recipe setting. A sequence of actions can be stored and saved in a Recipe, users can setup to execute this sequence of actions that was previously stored in the Recipe when an IF condition is

matched. A Recipe contains a sequence of actions, therefore, we can say a Recipe is a macro for Actions. The configuration page for Recipe Setting is shown as below:

Figure 5-8 : Recipe setting page

Follow the following steps:



- i. Select the total number of Recipe you are going to use from the dropdown list of the Recipe Amount field.
- ii. Assign an index number to the Recipe from the dropdown list of the “Index” field.
- iii. Select an Action type from the dropdown list of the Action field.
- iv. Click the Add button. An Action Setting page will appear for you to set up related Action Settings, please refer to THEN/ELSE Action.
- v. After you finish setting up Action Settings, the page will refresh automatically and the Actions will be listed on Recipe.

<input checked="" type="radio"/>	1:I-7024 AO0 = 10 mA	<input checked="" type="radio"/> One Time <input type="radio"/> Repeat
<input type="radio"/>	Send Email 1	<input checked="" type="radio"/> One Time <input type="radio"/> Repeat
<input type="radio"/>	Send CGI Command 1	<input checked="" type="radio"/> One Time <input type="radio"/> Repeat

Figure 5-9 : Recipe Action Management

In order to meet application requirement, for some Actions, WISE offers options to execute the Action one-time or repeatedly.

- One Time : When the IF Condition is TRUE, this Action will be executed once and only once. This Action will not be executed again until the IF Condition turns to be TRUE again.
- Repeat : When the IF Condition is TRUE, this Action will be executed repeatedly until the IF Condition turns to be FALSE.

- vi. All selected Actions will be listed on the Recipe page. Click on the radio checkbox to select the target Action, you can edit the selected Action by click on Edit button, or delete the Action from the list by click on Delete button. To rearrange the order of the Action, click the Move Up  or Move Down  button to move the target Action to the desired order. To delete all Actions, click on the Clear All button to remove all actions from the list.
- vii. Repeat steps ii ~ vi. After all Recipe settings are completed, click “Save” button to save the changes.

5.7 Data Logger Setting

WISE-5800 offers one set of Data Logger function that allows system to record I/O channel data in Data Log file at a scheduled time or under specific condition. In addition, it also allows to send the Data Log files by FTP or Email. The Data Log file is in CSV format. The following figure illustrates the configuration interface:

Data Logger Setting Page		
<input checked="" type="checkbox"/> Enable Data Logger		
File Name	Log	
Data Format	\$m5di6,\$m2ai3,\$m2ai5,\$m3ao3, DI 4-I-7044 Ch. 0 Add	
Sampling Period	<input checked="" type="checkbox"/> Enable 5 mins	
Close Log File	Every 2 hour(s)	
Total number of Log File	30	
Log File Sending Attribute		
<input checked="" type="checkbox"/> E-mail	Index	1 (Send as attachment when the log file is closed)
<input checked="" type="checkbox"/> FTP	IP	192 . 168 . 100 . 34
	Port	21
	Login ID	wise <input type="checkbox"/> Anonymous
	Password
	FTP Path	/Log
	Timeout	3000 (milliseconds)
	Time to upload	<input type="radio"/> Log file is closed <input checked="" type="radio"/> Every day at 23 o'clock
Save		

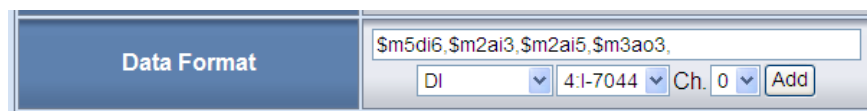
Figure 5-10 : Data Logger setting page

Follow the following steps:

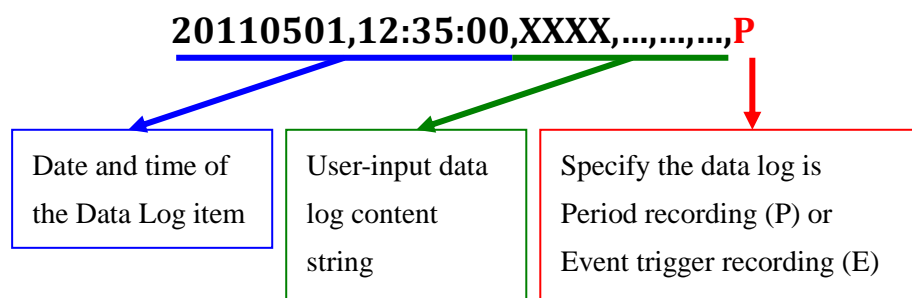
- i. Select “Enable Data Logger” to enable the data logger function.
- ii. In the “File Name” field, input the data log file name. This name has to be in English; the length is limited to 8 characters.
- iii. The “Data Format” field allows to edit data format and content. The

I/O channel drop down lists help for easy editing data log content format (please refer to 5.4 Email Setting section “Content” format setting for detail information).

Following is examples for data log content coding; the following coding indicates: I-7000 module(Address:5) DI6, I-7000 module (Address:2) AI3, I-7000 module(Address:2) AI5, I-7000 module (Address:3) AO3.



In the data log file, current date, time and data log type (Period recording or Event trigger recording) will also be automatically pasted to each data log item. The final data log content format will be like this:



- iv. Select “Sampling Period” to enable period recording function in WISE. When the time reaches the period time interval, the data will be recorded once in pre-set data format. The data recording will keep going periodically. There are ten options: 10 secs, 30 secs, 1 min, 2 mins, 3 mins, 5 mins, 10 min, 20 min, 30 min, 1 hour.
- v. In the “Close Log File” field, select the time interval to close a data log file. There are eight options: 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 8 hours, 12 hours, 24 hours.

For example, if the “Close Log File” time interval is set as 2 hours, and “Sampling Period” is set as 5 mins, it means WISE-5800 will record data every 5 mins. And if the file is created at A o’clock and B minutes, when the system time reached (A+2) o’clock, the Data Log file will be closed automatically (the time interval of this first file will be shorter than 2 hours) and create a new data log file to record another 2 hours and so on.

- vi. In the “Total number of Log File” field, select the total number of Log file that will be kept in the system. There are three options:

- 30, 50 or 100. After this setting is completed, the system will determine if the log file will be kept or not according to the file save time, the newest files will be kept and the oldest file will be automatically deleted if exceed the total number limit.
- vii. Click the check box to specify the Log file to be sent by Email or FTP. You can select both ways to send the Log file. If no option is selected, the data file will not be sent.
 - viii. If you select the option to send file by Email, select the Email index you are going to send to when the data file is closed. The Email of this index has to be previously set and the file will be sent as an attachment.
 - ix. If you select the option to send file by FTP, input the FTP Server IP address, port number, login ID, password, FTP path and Timeout information. There are two options for “Time to Upload”, you can choose to upload the file when the time of the Log file reached the “Closed File” time interval via FTP, or upload all files saved at that day at a scheduled time. The upload time can be set from the dropdown list.
 - x. After all Data Logger settings are completed, click “Save” button to save the changes.

6 Rules Setting

After finishing all Advanced Setting configurations, the user can start to edit IF-THEN-ELSE rules. Click the “Rules Setting” button, a Rule Manager table will appear, and the list of rules will be displayed on the left side of the page. At the left side of the page, the status of each rule will be displayed. And at the right side of the page will show detail content of each rule that was previously defined by the users. The rule setting page is shown as below:

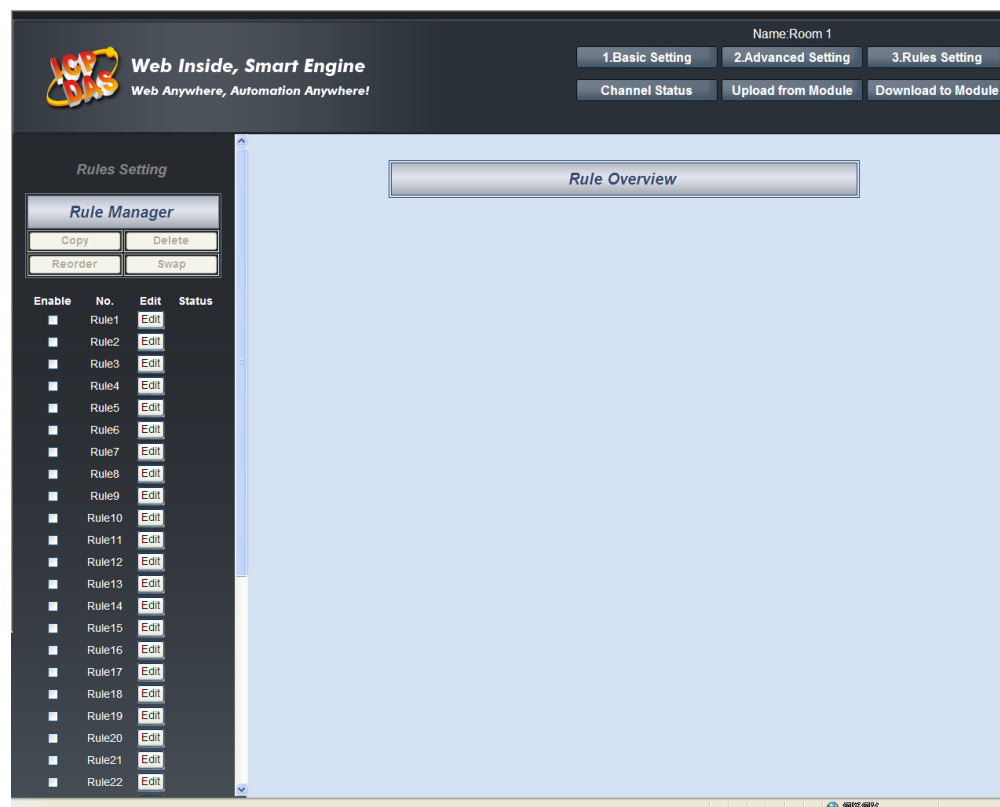


Figure 6-1 : Rules setting page

On the left side of the page, a Rule Manager table will appear at the top of the page. (More detail information for Rule Manager will follow.) Under the Rule Manager table, the list of rule contains four items:

Enable	No.	Edit	Status
<input type="checkbox"/>	Rule1	Edit	
<input type="checkbox"/>	Rule2	Edit	
<input type="checkbox"/>	Rule3	Edit	
<input type="checkbox"/>	Rule4	Edit	
<input type="checkbox"/>	Rule5	Edit	

Figure 6-2 : Enable rules, edit rules and status display

- ◆ **Enable:** A checkbox appears before each rule; check the checkbox to enable the rule and this rule will be executed after being downloaded, otherwise it will only be stored temporarily.
- ◆ **No.:** Indicates the identification number of the rule. To avoid possible error, it is recommended to assign the identification number in sequence.
- ◆ **Edit:** Click the Edit button to edit detail logic content of the rule.
- ◆ **Status:** “OK” indicates this rule is successfully defined. “Error” indicates there is error occurs. **Please note: if you make modification in IO setting (I-7000 Module or XW-Board) or in Advanced Setting after finish defining the rules, it might cause unexpected error due to the changes, some variables may no longer exist. Therefore, in case you make any modification, please double check your settings and Rules definition to make sure no errors are present.**

Click the “Edit” button, the Rules Setting page will appear:

IF		THEN		ELSE	
Condition1	None	Action1	None	Action1	None
Condition2	None	Action2	None	Action2	None
Condition3	None	Action3	None	Action3	None
Operator	None				

Clear Save


Figure 6-3 : Rule setting page

The rule number will be displayed at the top of the page. The Description field provides a space for users to make a brief description of this Rule. An IF-THEN-ELSE Rule setting table appears under the description section. Each Rule offer 3 IF conditions. The user could create IF(condition) statements by selecting appropriate operator (AND, OR) from the dropdown list. In order to avoid possible errors, the design of this table is foolproof: The user has to finish setting up Condition1 before moving on Condition2, and so on. Each Rule also offers 3 THEN actions, and 3 ELSE actions. More detail information will follow.

6.1 IF Condition

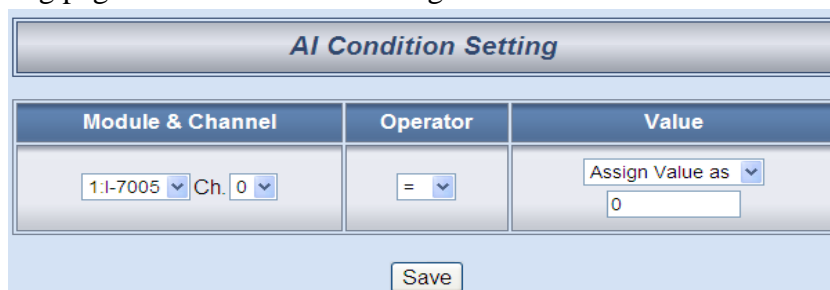
In IF Condition statement, the following values or their status can be included as evaluation criteria:

- ◆ AI
- ◆ DI
- ◆ DI Counter
- ◆ Internal Register
- ◆ Timer
- ◆ Schedule
- ◆ Rule Status

The AI and DI channels on WISE-5800 will automatically appear on the list. To include subjects other than AI or DI channels in the IF Condition statement; they have to be pre-defined in Advanced Setting first. The subjects that already being defined in Advanced Setting will appear on the dropdown list of IF Condition. Select the subject you want to use, and then click right side  button, a window will pop up for you to edit detail information.

6.1.1 AI

AI channel value can be included in the IF condition statements; the editing page for AI Condition Setting is shown as below:



The image shows a software window titled "AI Condition Setting". It contains a table with three columns: "Module & Channel", "Operator", and "Value". In the "Module & Channel" column, there are two dropdown menus showing "1:I-7005" and "Ch. 0". In the "Operator" column, there is a dropdown menu showing "=". In the "Value" column, there is a dropdown menu showing "Assign Value as" and a text input field containing "0". Below the table is a "Save" button.

Module & Channel	Operator	Value
1:I-7005 Ch. 0	=	Assign Value as 0

Save

Figure 6-4 : AI condition setting page

Follow the following steps:

- i. Specify the module and channel from the dropdown list of the "Module & Channel" section that you are going to include its value in the IF condition statements.

The "Module & Channel" section of XW-Board is shown as below (use XW304 AI channel 0 as an example):

Module & Channel
XW304 Channel 0

The “Module & Channel” section of I-7000 is shown as below; use I-7019 (Address 1) AI channel 3 as an example:

Module & Channel
1:I-7019 Ch. 3

- ii. Set up the expression statement for this channel value. Select an operator from “=”, “>”, “<”, “>=”, “<=”, or “<=”.
- iii. And then specify the evaluation value. If this AI channel value match the evaluation criteria, the result of this condition evaluation will be “true”.

You can compare the AI channel value with the following 3 values for condition evaluation:

- Self-Defined value : Giving a self-defined value to compare with the AI channel value.

Module & Channel	Operator	Value
1:I-7005 Ch. 0	=	Assign Value as 5

- Channel value : Using AI channel values from other modules(XW-Board or I-7000) to compare with the AI channel value.

Module & Channel	Operator	Value
1:I-7005 Ch. 0	=	AI 2:I-7018 Ch. 2

- Internal Register : Using the internal register value to compare with the AI channel value.

Module & Channel	Operator	Value
1:I-7005 Ch. 0	=	Internal Register 2

- iv. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.1.2 DI

DI channel value can be used as evaluation criteria for IF condition statement; the editing page for DI Condition Setting is shown as below:

Figure 6-5 : DI condition setting page

Follow the following steps:

- i. Specify the module and channel from the dropdown list of the “Module & Channel” section that you are going to include its value in the IF condition statements.
- ii. Define the evaluation criteria of the status in IF statement to be “OFF”, “ON”, “ON to OFF”, “OFF to ON” or “Change”. Once the DI channel value matches the evaluation criteria, the result of this condition evaluation will be “true”. **Please note: If the statement involves state transitions: “ON to OFF”, “OFF to ON” and “Change”, the action will be executed only once and only at the moment when the state transition occurs.**
- iii. Click “Save” button to save the settings. This popup window will be closed and return to the Rule settings page.

6.1.3 DI Counter

DI counter value can be used as evaluation criteria for IF condition statement; the editing page for DI Counter Condition Setting is shown as follow:

Figure 6-6 : DI Counter condition setting page

Follow the following steps:

- i. Specify the module and channel from the dropdown list of the “Module & Channel” section that you are going to include its

- value in the IF condition statements.
- ii. Set up the expression statement for this counter value. Select an operator from “=”, “>”, “<”, “>=”, “<=” or “Change”. If the operator is “=”, “>”, “<”, “>=” or “<=”, an evaluation value has to be specified; if the DI counter value match the evaluation criteria, the result of this condition evaluation will be “true”. If the operator is “Change”, the condition will be “true” when there is a change to the counter value. The action will be executed only once and only at the moment when DI Counter experience a change.
 - iii. Click “Save” button to save the settings. This popup window will be closed and return to the Rule settings page.

6.1.4 Internal Register

Internal Register value can be used as evaluation criteria for IF condition statement; the editing page for Internal Register Condition Setting is shown as follow:

Index	Operator	Condition
1	=	Assign Value as 0

Save

Figure 6-7 : Internal register condition setting page

Follow the following steps:

- i. Select the Internal Register that you are going to use the value as evaluation criteria for IF condition statement. Specify the Internal Register Index from the dropdown list of “Index” field.
- ii. Set up the expression statement for this Internal Register value. Select an operator from “=”, “>”, “<”, “>=” or “<=”, and then specify the evaluation value. If this Internal Register value match the evaluation criteria, the result of this condition evaluation will be “true”.

You can compare the Internal Register value with the following 3 values for condition evaluation:

- Self-Defined value : Giving a self-defined value to compare

with the Internal Register value

Index	Operator	Value
1	=	Assign Value as 5

- Channel value : Using AI channel values from other modules (XW-Board or I-7000) to compare with the Internal Register value.

Index	Operator	Value
1	=	AI 2:1-7018 Ch. 4

- Internal Register : Using another number of internal register value to compare with the Internal Register value.

Index	Operator	Value
1	=	Internal Register 3

- Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.1.5 Timer

Timer condition can be used as evaluation criteria for IF condition statement; the editing page for timer condition setting is shown as follow:

Timer Condition Setting	
Index	1
Status	Not Timeout
Save	

Figure 6-8 : Timer condition setting page

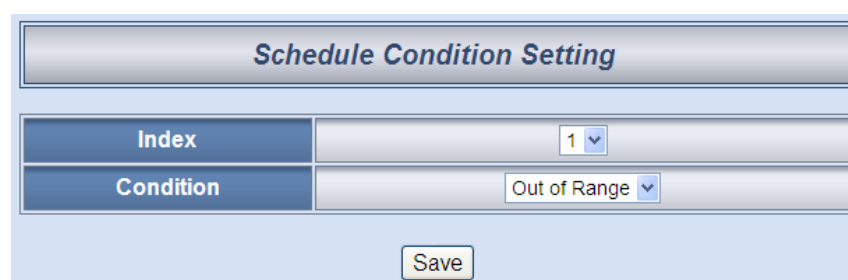
Follow the following steps:

- Select the timer that you are going to use its status as evaluation criteria for IF condition statement. Specify the timer index from the dropdown list of the “Index” field.

- ii. Define the evaluation criteria of the timer status in IF statement to be “Not timeout” or “Timeout”. If the timer status match the evaluation criteria, the result of this condition evaluation will be “true”.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.1.6 Schedule

Schedule condition can be used as evaluation criteria for IF condition statement; the editing page for Schedule condition Setting is shown as follow:



Schedule Condition Setting	
Index	1
Condition	Out of Range
<div>Save</div>	

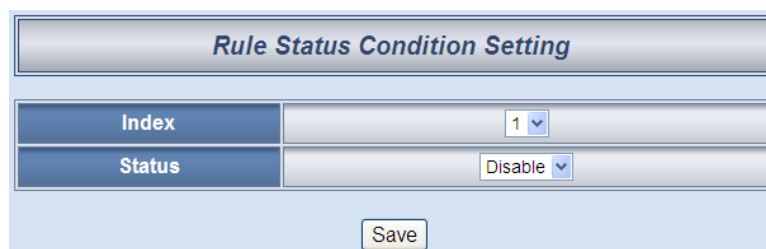
Figure 6-9 : Schedule condition setting page

Follow the following steps:

- i. Select the schedule that you are going to use its status as evaluation criteria for IF condition statement. Specify the schedule index from the dropdown list of the “Index” field.
- ii. Define the evaluation criteria of the status in IF statement to be “Out of Range” or “In Range”. If the status of the schedule matches the evaluation criteria, the result of this condition evaluation will be “true”.
- iii. Click “Save” button to save the settings. The popup window will be closed and return to the rule settings page.

6.1.7 Rule Status

The Rule Status (if the Rule is disabled or enabled) can be used as evaluation criteria for IF condition statement. **Please note: there must be at least one edited rule on WISE controller for setting up Rule Status in the IF Condition Setting page.** The editing page for Rule Status Condition Setting is shown as below:



Rule Status Condition Setting	
Index	1
Status	Disable
<input type="button" value="Save"/>	

Figure 6-10 : Rule Status condition setting page


Follow the following steps:

- i. Specify the index number of the Rule that is going to be used in the IF Condition statement from the dropdown list of the “Index” field.
- ii. Specify the Rule status to be Disable or Enable from the dropdown list of the “Status” field. When the Rule status matches the specified status, the evaluation result will be “true”.
- iii. Click “Save” button to save the settings. The Rule Status Condition Setting page will be closed and return to the Rule setting page.

6.2 THEN/ELSE Action

In the THEN/ELSE Action statement, the following values or status can be included:

- ◆ AO
- ◆ DO
- ◆ DI Counter
- ◆ Internal Register
- ◆ Timer
- ◆ Schedule
- ◆ Email
- ◆ CGI
- ◆ Recipe
- ◆ Rule Status
- ◆ Data Logger

Select the component for Action statement from the combo box, and then click the right side  button, a window will pop up for you to edit detail information. The THEN Action statement will be executed only when the result of IF condition statement is found “true”; otherwise the ELSE Action statement will be executed. In order to meet application requirement, for some Actions, WISE offers options to execute the Action one-time or repeatedly.

- One Time: when the IF Condition is TRUE, this Action will be executed once and only once. This Action will not be executed again until the IF Condition turns to be TRUE again.
- Repeat: when the IF Condition is TRUE, this Action will be executed repeatedly until the IF Condition turns to be FALSE.

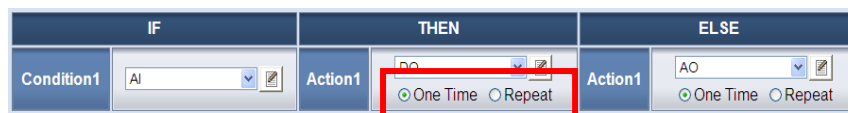


Figure 6-11 : "One-Time Action" & "Repeat Action" Items

6.2.1 AO

You can execute an action in AO channel in THEN/ELSE Action statement; the editing page for AO Action is shown as follow:

AO Action Setting		
Module & Channel	Operator	Value
3-I-7024 Ch. 0	=	Assign Value as 0
Save		

Figure 6-12 : AO action setting page

Follow the following steps:

- i. From the dropdown list of the “Module & Channel” field, select the AO channel index to execute actions.
- ii. Specify the Operator in the “Operator” field. The 3 operators are as follow :
 - “=” : Indicate assign the new AO channel value as the value in “Value” field
 - “+=” : Indicate assign the new AO channel value as the original AO channel value plus the value in “Value” field.
 - “-=” : Indicate assign the new AO channel value as the original AO channel value minus the value in “Value” field.
- iii. In the “Value” field, 4 sources can be used as channel value :
 - Self-Defined Value: giving a value defined by user

Module & Channel	Operator	Value
3-I-7024 Ch. 0	=	Assign Value as 5

- AI Channel value: using AI channel values from XW-Board or I-7000

Module & Channel	Operator	Value
3-I-7024 Ch. 0	=	AI 2-I-7018 Ch. 4

- AO Channel value: using AO channel values from XW-Board or I-7000

Module & Channel	Operator	Value
3-I-7024 Ch. 0	=	AO 4-I-7024 Ch. 3

- Internal Register: using value of Internal Register

Module & Channel	Operator	Value
3:I-7024 Ch. 0	=	Internal Register 1

- Click “Save” button to save the settings. The popup window will be closed and will return to the rule setting page.

6.2.2 DO

You can execute an action in DO channel in the THEN/ELSE Action statement; the editing page for DO Action is shown as follow:

DO Action Setting	
Module & Channel	4:I-7060 Channel 2
Channel Value	OFF
Save	

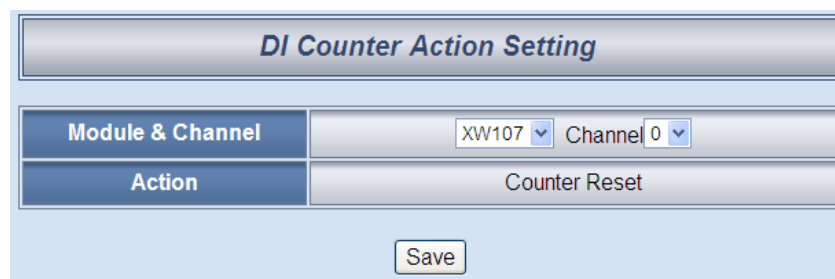
Figure 6-13 : DO action setting page

Follow the following steps:

- Select the DO channel from the dropdown list of channel field in the “Module & Channel” section.
- Specify the output value of DO Channel from the dropdown list of the “Channel Value” field. The output value can be “OFF”, “ON” or “Pulse Output” (**Pulse Output applies to XW-Board only**). For I-7088 belongs to PWM (**Pulse width modulation**) modules, the DO channel Action will be “Start PWM” or “Stop PWM”.
- Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.3 DI Counter

You can reset DI counter in the THEN/ELSE Action statement; the editing page for DI counter Action is shown as follow:



The screenshot shows the 'DI Counter Action Setting' window. It has a title bar with the text 'DI Counter Action Setting'. Below the title bar, there are two sections. The first section is labeled 'Module & Channel' and contains two dropdown menus: 'XW107' and 'Channel 0'. The second section is labeled 'Action' and contains the text 'Counter Reset'. At the bottom of the window, there is a 'Save' button.

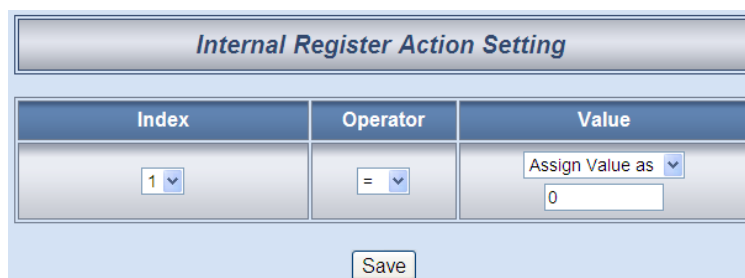
Figure 6-14 : DI Counter action setting page

Follow the following steps:

- i. Select the DI channel to reset DI counter from the dropdown list of channel field in the “Module & Channel” section.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.4 Internal Register

You can modify the value of Internal Register in the THEN/ELSE Action statement; the editing page for Internal Register Action Setting is shown as below:



The screenshot shows the 'Internal Register Action Setting' window. It has a title bar with the text 'Internal Register Action Setting'. Below the title bar, there is a table with three columns: 'Index', 'Operator', and 'Value'. The 'Index' column has a dropdown menu with '1' selected. The 'Operator' column has a dropdown menu with '=' selected. The 'Value' column has a dropdown menu with 'Assign Value as' selected and a text input field with '0'. At the bottom of the window, there is a 'Save' button.

Figure 6-15 : Internal Register action setting page

Follow the following steps:

- i. Select the pre-defined Internal Register from the dropdown list of the “Index” field. **Please note: the Internal Register you select has to be enabled in Advanced Setting.**
- ii. Specify the Operator in the “Operator” field. The 3 operators are as follow:
 - “=” : Indicate assign the new Internal Register value as the value in “Value” field.
 - “+=” : Indicate assign the new Internal Register value as the original Internal Register value plus the value in “Value” field.
 - “-=” : Indicate assign the new Internal Register value as the

original Internal Register value minus the value in “Value” field.

iii. In the “Value” field, 4 sources can be used as value :

- Self-Defined Value: giving a value defined by user

Index	Operator	Value
1	=	Assign Value as 5

- AI Channel value: using AI channel values from XW-Board or I-7000

Index	Operator	Value
1	=	AI 1:1-7005 Ch. 3

- AO Channel value: using AO channel values from XW-Board or I-7000

Index	Operator	Value
1	=	AO 3:1-7024 Ch. 3

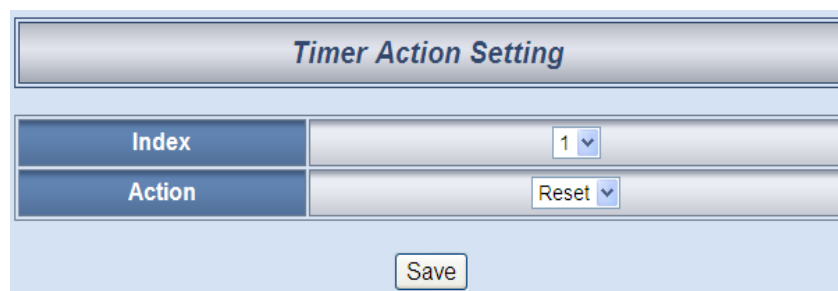
- Internal Register: using value of Internal Register

Index	Operator	Value
1	=	Internal Register 2

iv. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.5 Timer

You can change the Timer status (to Start or to Reset the Timer) in the THEN/ELSE Action statement; the editing page for Timer Action Setting is shown as below:



Timer Action Setting	
Index	1 ▼
Action	Reset ▼
<div>Save</div>	

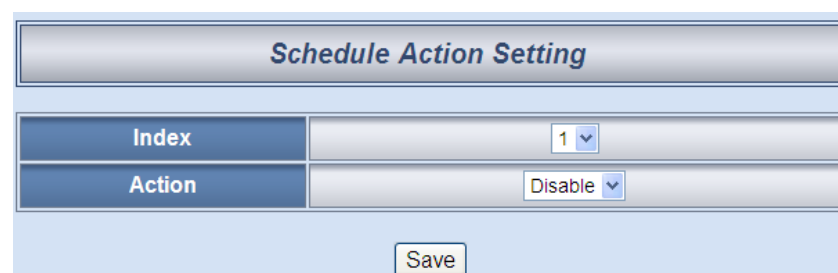
Figure 6-16 : Timer action setting page

Follow the following steps:

- Select the pre-defined Timer from the dropdown list of the “Index” field. Please note: the Timer you select has to be enabled in Advanced Setting.
- Specify you want to “Reset” or “Start” this Timer when this THEN/ELSE Action statement is executed.
- Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.6 Schedule

You can change the Schedule status (to Enable or to Disable the Schedule) in the THEN/ELSE Action statement; the editing page for Schedule Action Setting is shown as below:



Schedule Action Setting	
Index	1 ▼
Action	Disable ▼
<div>Save</div>	

Figure 6-17 : Schedule action setting page

Follow the following steps:

- Select the pre-defined Schedule from the dropdown list of the “Index” field. Please note: the Schedule you select has to be enabled in Advanced Setting.
- Specify you want to “Enable” or “Disable” this schedule when this THEN/ELSE Action statement is executed.
- Click “Save” button to save the settings. The popup window will

be closed and return to the Rule settings page.

6.2.7 Email

You can send a message to an Email group when executing a THEN/ELSE Action statement; the editing page is as below:

Email Action Setting	
Index	1
Email Information	
1st Receiver Email Address	Robert@hotmail.com
2nd Receiver Email Address	
3rd Receiver Email Address	
4th Receiver Email Address	
5th Receiver Email Address	
Subject	Temperature Report
Content	Temperature is too high
<input type="button" value="Save"/>	

Figure 6-18 : Email action setting page

Follow the following steps:

- i. Select the pre-set Email group from the dropdown list of the “Index” field. Please note: the Email you select has to be enabled in Advanced Setting. The Email group information will be displayed for you to verify if this is the Email group you are going to send the message to.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.8 CGI

You can send a CGI Command to a Remote Server device when executing a THEN/ELSE Action statement; the editing page is shown as below:

CGI Action Setting	
Index	1 ▼
Action	Send to http://192.168.100.92:0/RESET
<div>Save</div>	

Figure 6-19 : CGI Command action setting page

Follow the following steps:

- Select the pre-set CGI Command action from the dropdown list of the “Index” field. Please note: the CGI Command Index you select has to be enabled in Advanced Setting.
- Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.9 Recipe

You can execute a Recipe action in THEN/ELSE Action statement; the editing page for Recipe Action is shown as follow:

Recipe Action Setting	
Index	1 ▼
Action	Execute Recipe
<div>Save</div>	

Figure 6-20 : Recipe action setting page

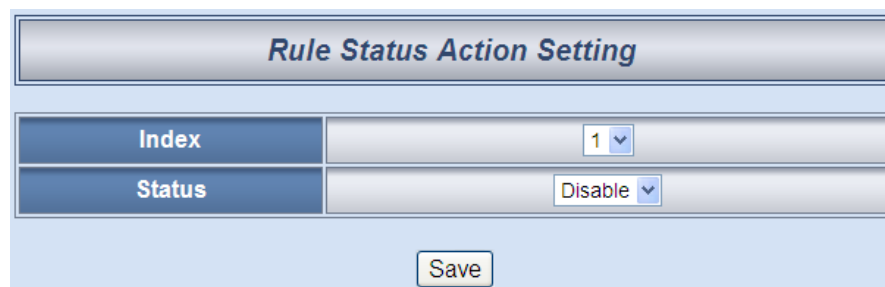
Follow the following steps:

- Select the pre-set Recipe action from the dropdown list of the “Index” field. Please note: the Recipe Index you select has to be enabled in Advanced Setting.
- Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.2.10 Rule Status

The Rule Status can be modified to be Disable or Enable in the Action. The editing page for Rule Status Action Setting is shown as

below:



Rule Status Action Setting	
Index	1 ▼
Status	Disable ▼
<input type="button" value="Save"/>	

Figure 6-21 : Rule Status action setting page

Follow the following steps:

- i. Specify the index number of the Rule (It has to be a previously saved Rule) that is going to be changed in the Action Condition statement from the dropdown list of the “Index” field.
- ii. Specify the Rule status to be Disable or Enable from the dropdown list of the “Status” field. When the Action being executed, the Rule status will be changed to specified status.
- iii. Click “Save” button to save the settings. The Rule Status Action Setting page will be closed and return to the Rule setting page.

6.2.11 Data Logger

User can execute: “One-Time Log”, “Start” or “Stop” for one-time log recording, start period recording or stop period recording in the Action statements. The three actions are described below:

- One-Time Log: Perform data recording one-time only when an THEN/ELSE action event is triggered.
- Stop: Stop period recording data. During the stop recording interval, if the current Log file reached the “Close Log File” time interval and the file is closed, the file will still be sent via FTP or Email. The system will create a new Data Log file for One-Time Log recording.
- Start: Start period recording data.

The editing page for Data Logger Action Setting is shown as below:

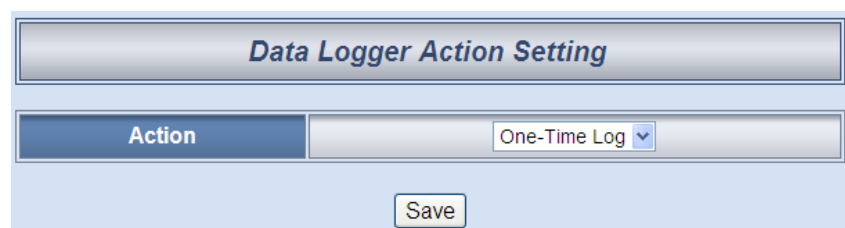
The image shows a software dialog box titled "Data Logger Action Setting". It has a light blue background. At the top, there is a header bar with the title "Data Logger Action Setting" in a bold, italicized font. Below the header, there is a section with a blue tab labeled "Action". To the right of the tab is a dropdown menu currently showing "One-Time Log" with a small downward arrow. At the bottom center of the dialog, there is a "Save" button.

Figure 6-22 : Data Logger action setting page

Follow the following steps:

- i. In the “Action” field, select “One-Time Log”, “Start” or “Stop” from the drop down list.
- ii. Click “Save” button to save the settings. The popup window will be closed and return to the Rule settings page.

6.3 Summary of the Rules

After you finish editing all IF condition and THEN / ELSE action statements for a rule, return to the Rules Setting page and click “Save” to save all settings of this rule. **Please note: if you want to clear previous settings, after you click “Clear” button, you have to click “Save” to make sure this “Clear” status is saved.** Rules Setting page is shown as below:

IF		THEN		ELSE	
Condition1	AI	Action1	DO <input type="radio"/> One Time <input type="radio"/> Repeat	Action1	None
Condition2	None	Action2	None	Action2	None
Condition3	None	Action3	None	Action3	None
Operator	None				

Figure 6-23 : Clear/Save Rules

Each time you finish editing a Rule will go back to the Rules Setting main page. All statements of edited Rules will be displayed. Rules Setting main page is shown as below:

Figure 6-24 : Rule setting main page

Click “Rules Setting” button to display detail rules description. Rules can be downloaded to the hardware device immediately after you successfully set up one or more rule(s).

6.4 Rule Manager

The Rule Manager allows easy modification and deployment with existing rules. By a few simple steps, users can easily change the rule orders or make modification with previously edited rules. The Rule Manager table is shown as below:



Figure 6-25 : Rule Manager setting page

Rule Manager offers 4 functions:

- ◆ **Copy:** Copy the content of previously edited rule to another rule. Click “Copy” button, a window as shown below will pop up. Select the source rule from the first field, and then select the destination(s) from the second fields (multiple rule destinations is allowed). Click “Save” button to copy the content of the source rule to all destination rules.



Figure 6-26 : Rule Copy setting page

- ◆ **Reset:** Allows to clear rule content of previously edited rules. Click “Reset” button, a window as shown below will pop up. Rules that are previously edited will be listed on the page, select the rule to be cleared and then click “Save” button, the rule you select will be reset.

Figure 6-27 : Rule Reset setting page

- ◆ **Reorder:** Reorder existing rules. Click “Reorder” button, a window as shown below will pop up. A menu will appear at the top of the page, it contains a drop down list for selecting the target rule, and a pair of “Move Up”/“Move Down” buttons to move target rule to the desired location. All rule locations will be listed in sequence (currently support 36 rule locations). If the rule content of a specific rule location has been previously edited, “Rule Content X” (X: rule sequence index) will appear. If the rule content of the rule location is blank, it will be specified as “None”. To reorder a rule, select the target rule from the dropdown list, the corresponding “Rule content X” font will turn to bold black from its usual black. Click on “Move Up”/“Move Down” buttons to move the selected rule to the desired location and then click “Save” to save the settings.

Rule	Content	Rule	Content	Rule	Content
Rule1	Rule Content1	Rule13	None	Rule25	None
Rule2	Rule Content2	Rule14	None	Rule26	None
Rule3	Rule Content3	Rule15	None	Rule27	None
Rule4	None	Rule16	None	Rule28	None
Rule5	None	Rule17	None	Rule29	None
Rule6	None	Rule18	None	Rule30	None
Rule7	None	Rule19	None	Rule31	None
Rule8	None	Rule20	None	Rule32	None
Rule9	None	Rule21	None	Rule33	None
Rule10	None	Rule22	None	Rule34	None
Rule11	None	Rule23	None	Rule35	None
Rule12	None	Rule24	None	Rule36	None

Figure 6-28 : Rule Reorder setting page

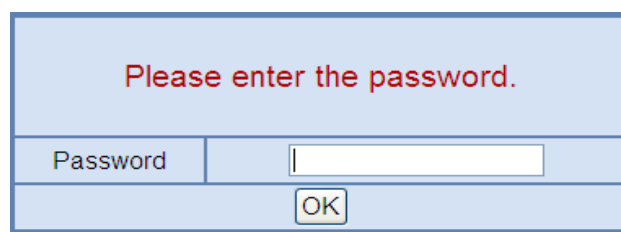
- ◆ **Swap:** Exchange the Rule content of a pair of rules. Click Swap button, a window as shown below will pop up. From the left side drop down list, select the first rule (has to be previously edited), and select the second rule from the right side drop down list (the rule content can be blank), click “Save” to swap the rule content.



Figure 6-29 : Rule Swap setting page

7 Download to Module

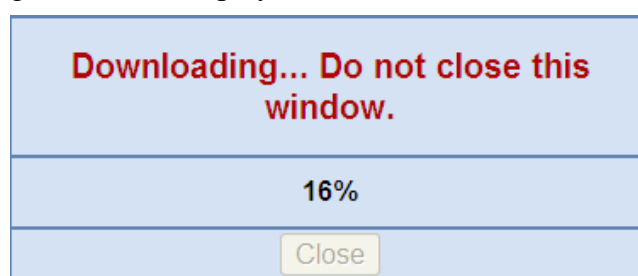
Download button allows you to download edited rules from Web UI to hardware devices. Click the “Download to Module” button, a popup window will appear for user to input the password:



Please enter the password.	
Password	<input type="text"/>
<input type="button" value="OK"/>	

Figure 7-1 : Enter the password

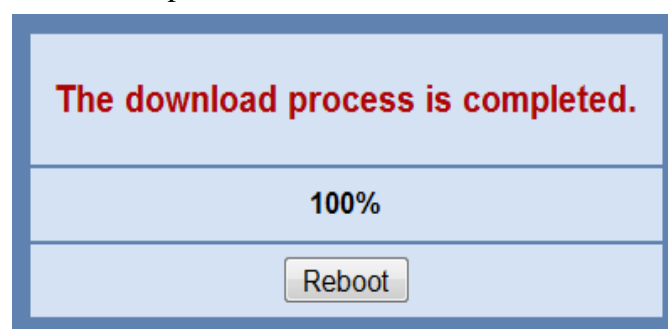
If the password is incorrect, the download will not be processed, the download process will be started only when the correct password is entered. Current download progress will be displayed as below:



Downloading... Do not close this window.
16%
<input type="button" value="Close"/>

Figure 7-2 : Showing download progress

When the download process is finished, the popup window will notify the user the saving process is completed:



The download process is completed.
100%
<input type="button" value="Reboot"/>

Figure 7-3 : Message showing a successful download

Click “Reboot” button to complete the process and reboot the WISE controller. Now WISE will start to run the rules that have been downloaded. At this time, you can still edit or modify the content of the rules.

8 Upload from Module

“Upload from Module” button allows you to retrieve Rules Setting information from the hardware devices and edit them at this Rules Setting page. Click “Upload from Module” to start the upload process. When the upload process is finished, the window showing progress status will notify the user the process is completed:

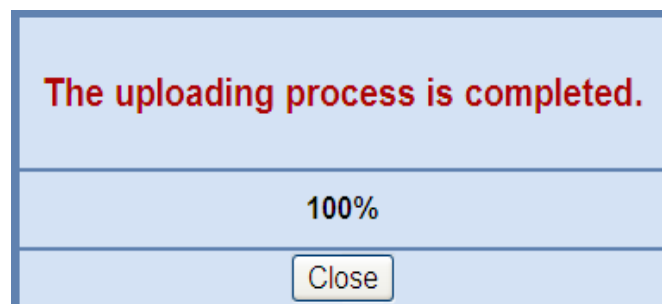


Figure 8-1 : Message showing a successful upload

Click “close” to close the upload process window to finish upload. Now the rules have been uploaded from hardware devices to the web page, you can modify and download the edited rules to the hardware devices later again.

9 Channel Status

Channel Status function offers an easy to view monitoring page that allows users to view important controller information in real time without SCADA software. The Channel Status page is shown as below:



Channel Status Page

Module: 16:I-7060

DI Channel				
Channel	Ch.0	Ch.1	Ch.2	Ch.3
Nickname	Window1	Window2	Window3	Window4
Value	ON	OFF	ON	OFF
Counter	0	1	0	1

DO Channel				
Channel	Ch.0	Ch.1	Ch.2	Ch.3
Nickname	Door1	Door2	Door3	Door4
Value	<input type="button" value="OFF"/>	<input type="button" value="ON"/>	<input type="button" value="OFF"/>	<input type="button" value="ON"/>

Figure 9-1 : Channel Status page

On the Channel Status page, select the I/O module that is connected to the WISE-5800, the values of DI / DO / AI / AO channel, DI counter, and the Internal Register will be displayed. If you give nicknames to the I/O channels or Internal Registers, the nicknames will be shown on this page as well. You can modify the values of the DO channels for the I/O modules by clicking on the value buttons on this page. This page will be updated once every 10 seconds, showing the latest data of the controllers.

10 Firmware Update

10.1 Introduction

WISE Firmware Uploader is a software tool provides a user-friendly interface to easily update WISE firmware that runs on WISE hardware devices. With a few clicks, users could upload the latest WISE firmware to the hardware.

System Requirements:

- Operating System: Windows Server 2003, Windows Server 2008, Windows XP, Windows Vista and Windows 7.
- Make sure you have installed Microsoft .NET Framework Version 2.0 (or later)

■ You can download Microsoft .Net Framework Version 2.0 from the link below:

<http://www.microsoft.com/downloads/details.aspx?FamilyID=0856eacb-4362-4b0d-8edd-aab15c5e04f5&DisplayLang=en>

■ You can download Microsoft .Net Framework Version 3.5 from the link below:

<http://www.microsoft.com/downloads/details.aspx?familyid=333325FD-AE52-4E35-B531-508D977D32A6&displaylang=en>

Please note: User must use WISE Firmware Uploader V2.0 (or later) for WISE-5800 firmware update process.

10.2 Install / Uninstall WISE Firmware Uploader

10.2.1 Install WISE Firmware Uploader

Follow the steps below to install WISE Firmware Uploader:

- Obtain the WISE Firmware Uploader V2.0 setup file (WISE Firmware Uploader Setup V2.0.exe) or later.
- Double click the setup file to install the file, you will see a window pop up as below, click [Next] to continue.

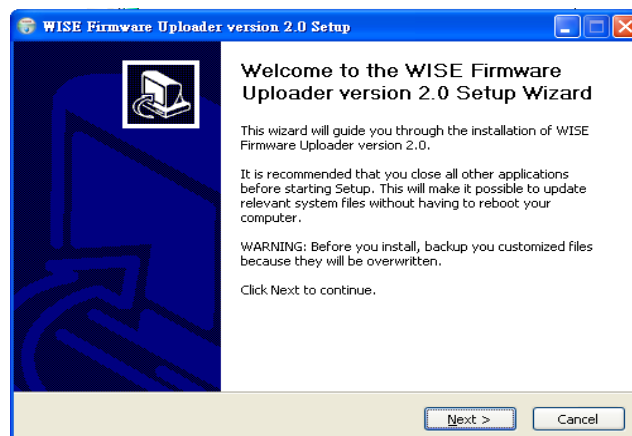


Figure 10-1 : Install WISE Firmware Uploader

- Choose the installation location to install WISE Firmware Uploader. Click [Install] to start the installation.

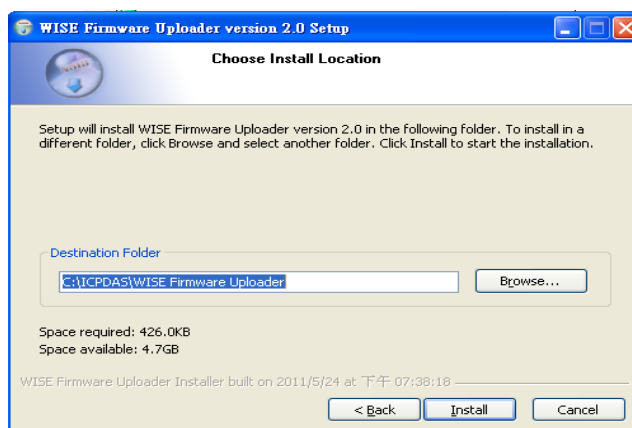


Figure 10-2 : Select installation directory

- The installation progress will be shown as below; please wait till the installation is completed.

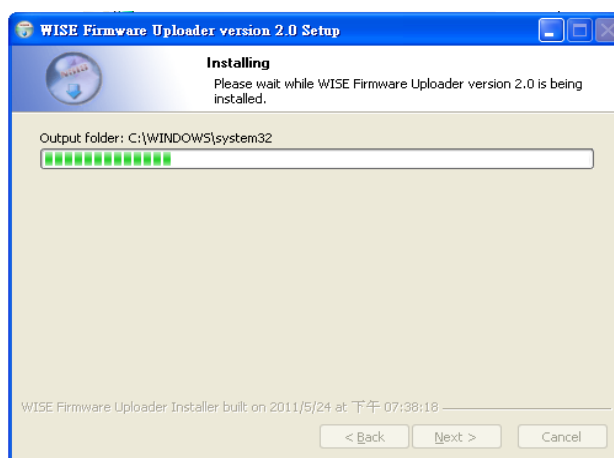


Figure 10-3 : Display installation progress

- When the installation is completed, click [Finish] to close the process.

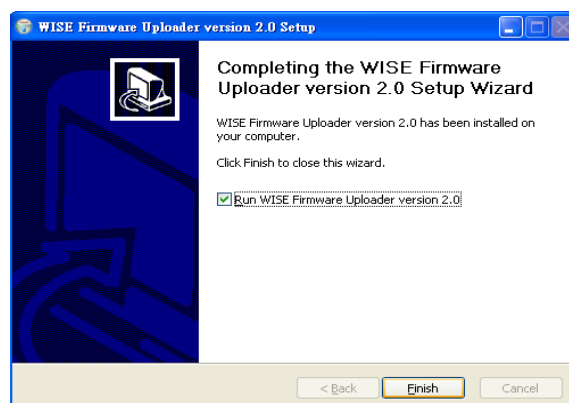


Figure 10-4 : Complete the installation

10.2.2 Uninstall WISE Firmware Uploader

Follow the steps below to uninstall WISE Firmware Uploader:

- Click [Start]→ [All Programs]→[ICPDAS]→[WISE], and then click [Uninstall] under the [WISE] category.

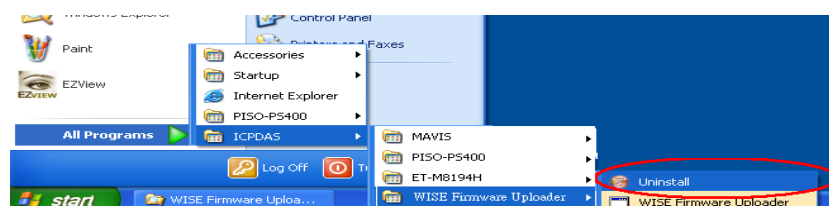


Figure 10-5 : Start to uninstall WISE Firmware Uploader

- You will see a window pop up as below, click [Next] to continue.

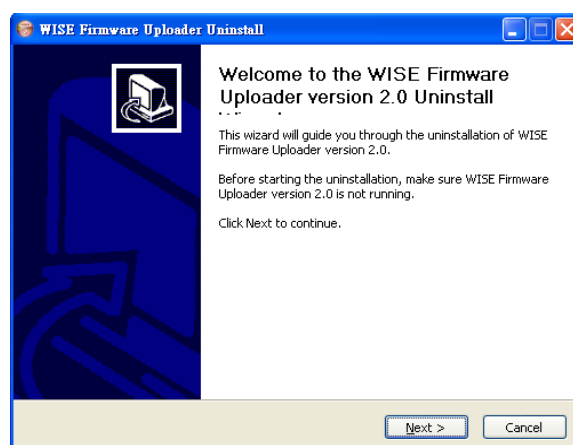


Figure 10-6 : Uninstall WISE Firmware Uploader (1)

- Click [Uninstall] to uninstall the program.

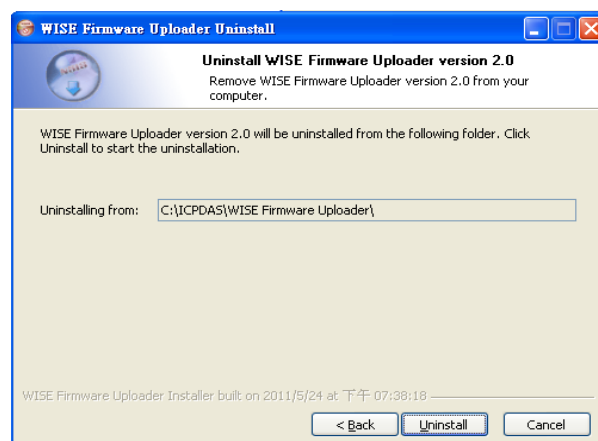


Figure 10-7 : Uninstall WISE Firmware Uploader (2)

- When the uninstall process is completed, click [Finish] to finish the process.

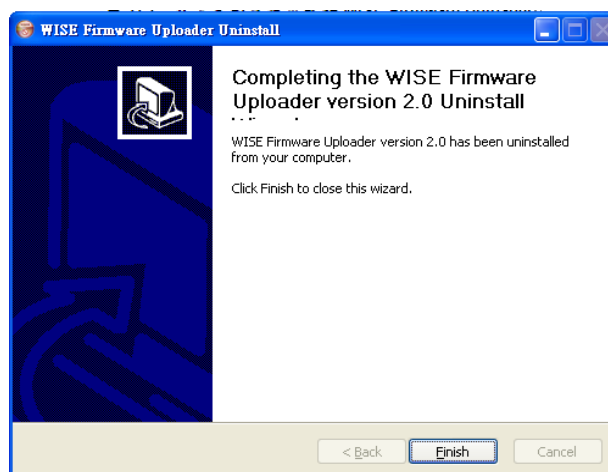


Figure 10-8 : Complete uninstalling WISE Firmware Uploader

10.3 Update WISE firmware

Please follow the seven steps below to update the WISE firmware program on the hardware devices:

i. Before update

- Please visit WISE product web site (<http://wise.icpdas.com/>) or contact ICP DAS service to obtain the latest version of the WISE-5800 firmware program. Copy the file to the computer that you previously installed WISE Firmware Uploader.

- Connect the WISE-5800 (the one you are going to update WISE firmware) to the network. Please verify and make a note of the WISE -5800 IP address, you will need it later in the process.

ii. Execute WISE Firmware Uploader

- Taking Windows XP as an example: click [Start]→[All Programs]→[ICPDAS]→[WISE], and then click [WISE Firmware Uploader] under the [WISE] category to start the program.

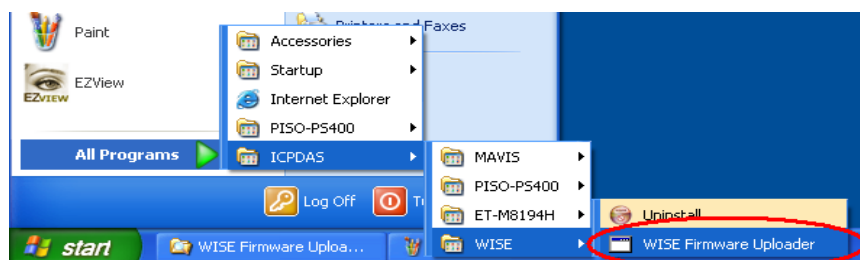


Figure 10-9 : Launch WISE Firmware Uploader

iii. Select WISE module type

Select the WISE module type from the dropdown list. Make sure the module type is WISE-5800, as shown in the following figure.

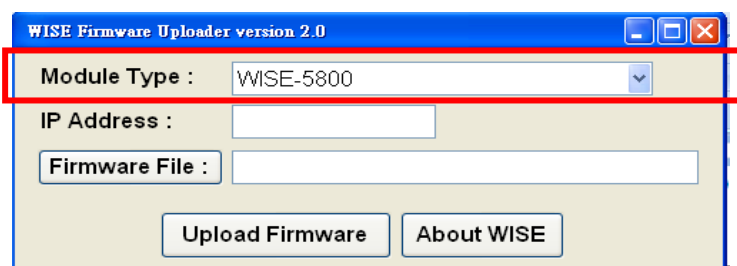


Figure 10-10 : Select the WISE module type

iv. Set up Module IP

Enter the IP address of the module that you are going to update WISE firmware, as shown in the following figure.

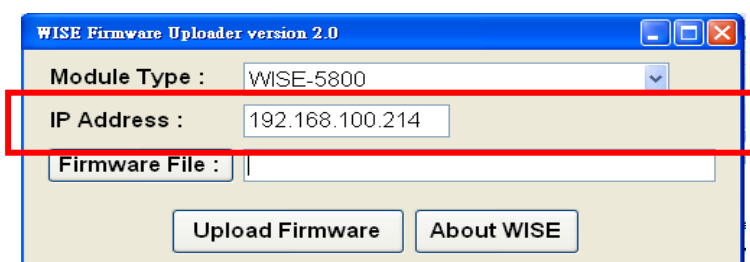


Figure 10-11 : Assign IP address

v. Select WISE firmware file

Click “Firmware File” button; browse the file through the File Dialog Box to select the appropriate WISE firmware version, as shown in the following figure:

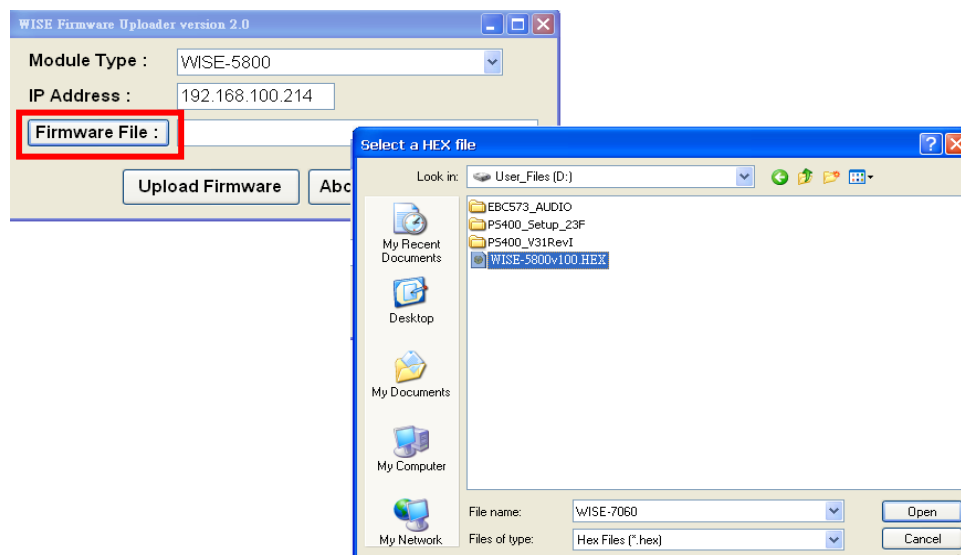


Figure 10-12 : Select the WISE firmware

vi. Upload WISE firmware program

Click ”Upload Firmware” button to start update WISE firmware to the WISE module.

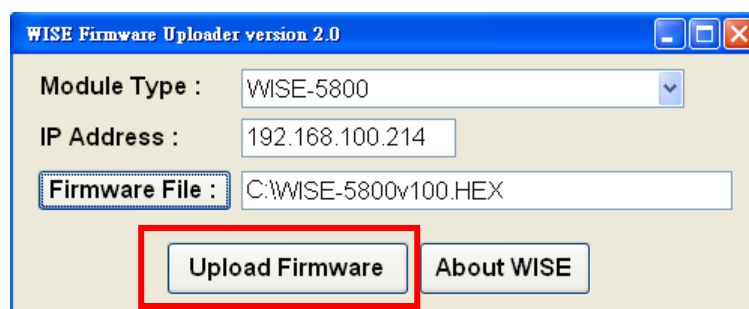


Figure 10-13 : Upload firmware

The status of WISE firmware update progress will be shown as below:

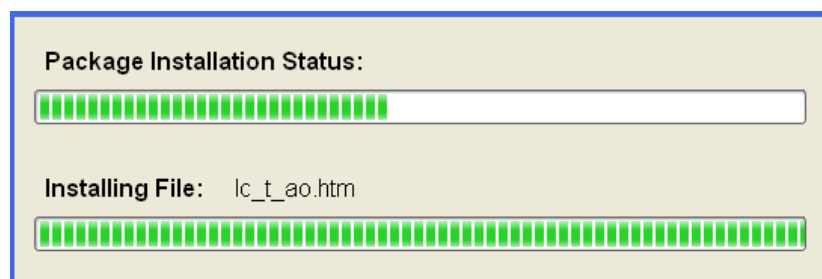


Figure 10-14 : Display firmware update progress(1)

When the following figure is displayed, please wait for about 10 Secs; the WISE module is arranging the firmware files. Please note: this message will be displayed 4 times during the update process.

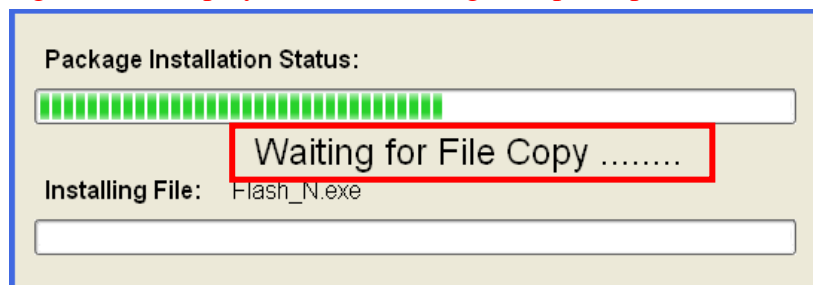


Figure 10-15 : Display firmware update progress(2)

When the update of WISE firmware is completed, a pop-up window will appear to inform the user. Close the window to finish firmware upload.



Figure 10-16 : Complete firmware update

vii. Module reboot automatically

After complete the firmware update process, WISE module will automatically reboot. The new updated firmware will take effect after the reboot.

Appendix I : Modbus Address Table

WISE allows you to retrieve data on hardware devices via Modbus TCP. WISE-5800 register addresses are specified according to Modbus register mapping tables (more detailed information will follow).

Please Note :

- The addresses are in **Base 0** format
- The addresses are in **Decimal** format
- The **default value of NetID is 1**, and you can modify the NetID value in the Ethernet Setting page. (Please refer to 4.3 Ethernet Setting).
- If the data is displayed in Floating format (AI channel value, AO channel value or Internal Register, etc.), each record of data will take two registers to hold the data. The following code example demonstrates how to join the two registers into one floating point value.

```
float register_to_float(short r1, short r2)
{
    float f;
    int *a = &f;
    *a = r1;
    a++;
    *a = r2;
    return f;
}
```

Please note: for the compilers are different (big endian or little endian) the floating point composing order might be different. For example: if r1 represent the address of 30040 register and r2 represent the address of 30041 register, to join r1 and r2 to a floating point, in the system is big endian system you will need to call:

```
float value = register_to_float(r1, r2);
```

Instead, if the system is little endian system, you will need to call:

```
float value = register_to_float(r2, r1);
```

PS: if you are not sure your editor belongs to which system, try both systems to find the accurate one.

WISE-5800 Modbus Register Address Table

Modbus Address	00000 (Coils Output)	10000 (Discrete Input)	30000 (Input Registers)	40000 (Holding Registers)
0~19	WISE-5800 System Data			
20~39	XW Board Data			
40~59			I-7000 Module name	Internal Register Data
60~79			Error Code of I-7000	
80~139				
140~179	I-7000 Module Data (RS-485 address=1)			
180~219	I-7000 Module Data (RS-485 address=2)			
220~259	I-7000 Module Data (RS-485 address=3)			
260~299	I-7000 Module Data (RS-485 address=4)			
300~339	I-7000 Module Data (RS-485 address=5)			
340~379	I-7000 Module Data (RS-485 address=6)			
380~419	I-7000 Module Data (RS-485 address=7)			
420~459	I-7000 Module Data (RS-485 address=8)			
460~499	I-7000 Module Data (RS-485 address=9)			
500~539	I-7000 Module Data (RS-485 address=10)			
540~579	I-7000 Module Data (RS-485 address=11)			
580~619	I-7000 Module Data (RS-485 address=12)			
620~659	I-7000 Module Data (RS-485 address=13)			
660~699	I-7000 Module Data (RS-485 address=14)			
700~739	I-7000 Module Data (RS-485 address=15)			
740~779	I-7000 Module Data (RS 485 address=16)			

1. WISE-5800 System Data :

This block stores the system information of WISE-5800, shown as below:

Parameter Name	Modbus Address	Length	Data Type	Range
Coils Output, Unit : Coil(8 Bits)				
Reboot switch	00000	1	Byte	1=reboot
Input Register, Unit : Register(16 Bits)				
Module Name	30000	1	Int	0~65535
XW-Board Name	30001	1	Int	0~65535
Firmware Version	30002	2	Float	Floating Point
Alive Counter	30004	1	Int	0~65535
Cycle Time	30005	1	Int	0~65535
MAC Address 1	30006	1	Int	0~255
MAC Address 2	30007	1	Int	0~255
MAC Address 3	30008	1	Int	0~255
MAC Address 4	30009	1	Int	0~255
MAC Address 5	30010	1	Int	0~255
MAC Address 6	30011	1	Int	0~255
Web Port	30012	1	Int	0~60000
Modbus TCP NetID	30013	1	Int	0~255
Holding Register, Unit : Register(16 Bits)				
Ethernet IP 1	40000	1	Int	0~255
Ethernet IP 2	40001	1	Int	0~255
Ethernet IP 3	40002	1	Int	0~255
Ethernet IP 4	40003	1	Int	0~255
Subnet Mask 1	40004	1	Int	0~255
Subnet Mask 2	40005	1	Int	0~255
Subnet Mask 3	40006	1	Int	0~255
Subnet Mask 4	40007	1	Int	0~255
Gateway 1	40008	1	Int	0~255
Gateway 2	40009	1	Int	0~255
Gateway 3	40010	1	Int	0~255
Gateway 4	40011	1	Int	0~255

2.XW Board Data

This block stores information of XW-Board. For different XW-Board modules, the data will be store in different address, the following sections shows corresponding address information for different modules.

● XW107

Parameter Name	Modbus Address	Length	Data Type	Range
Coils Outputs, Unit : Coil(8 Bits)				
DO Ch.0	00020	1	Byte	0=OFF, 1=ON
DO Ch.1	00021	1	Byte	0=OFF, 1=ON
DO Ch.2	00022	1	Byte	0=OFF, 1=ON
DO Ch.3	00023	1	Byte	0=OFF, 1=ON
DO Ch.4	00024	1	Byte	0=OFF, 1=ON
DO Ch.5	00025	1	Byte	0=OFF, 1=ON
DO Ch.6	00026	1	Byte	0=OFF, 1=ON
DO Ch.7	00027	1	Byte	0=OFF, 1=ON
Discrete Inputs, Unit : Discrete Input (8 Bits)				
DI Ch.0	10020	1	Byte	1=OFF, 0=ON
DI Ch.1	10021	1	Byte	1=OFF, 0=ON
DI Ch.2	10022	1	Byte	1=OFF, 0=ON
DI Ch.3	10023	1	Byte	1=OFF, 0=ON
DI Ch.4	10024	1	Byte	1=OFF, 0=ON
DI Ch.5	10025	1	Byte	1=OFF, 0=ON
DI Ch.6	10026	1	Byte	1=OFF, 0=ON
DI Ch.7	10027	1	Byte	1=OFF, 0=ON

3.I-7000 Module name

This block stores the Module names of the I-7000 modules which connect with WISE-5800.

Parameter Name	Modbus Address	Length	Data Type	Range
Input Register, Unit : Register(16 Bits)				
I-7000 Module name of address 1~16	30040-30055	1	Int	7011~7088

4. Error Code of I-7000

This block stores the Error Code that is generated during the operation of I-7000 modules. The Error Code helps to quickly identify problems when experience communication difficulties.

Parameter Name	Modbus Address	Length	Data Type	Range
Input Register, Unit : Register(16 Bits)				
Error Code of I-7000 of address 1~16	30060-30075	1	Int	0~65535

The Error Code list is as follow:

Code	Description
0	No Error
-1	Port Error
-2	Data Error
-3	Parity Error
-4	Stop Error
-5	TimeOut
-6	Queue Empty
-7	Queue Overflow
-8	Pos Error
-9	Addr Error
-10	Block Error
-11	Write Error
-12	Segment Error
-13	BaudRate Error
-14	Checksum Error
-15	Channel Error
-16	BaudRate Error
-17	TriggerLevel Error
-18	Date Error
-19	Time Error
-20	Out Of Memory
99	The I-7000 module written in the Rule file is not identical to the actual hardware module.

5. Internal Register Data

This block stores 48 sets of Internal Register data provided by WISE controller.

Parameter Name	Modbus Address	Length	Data Type	Range
Holding Register, Unit :Register(16 Bits)				
Internal Register 01	40020	2	Float	Floating Point
Internal Register 02	40022	2	Float	Floating Point
Internal Register 03	40024	2	Float	Floating Point
Internal Register 04	40026	2	Float	Floating Point
Internal Register 05	40028	2	Float	Floating Point
Internal Register 06	40030	2	Float	Floating Point
Internal Register 07	40032	2	Float	Floating Point
Internal Register 08	40034	2	Float	Floating Point
Internal Register 09	40036	2	Float	Floating Point
Internal Register 10	40038	2	Float	Floating Point
.....				
Internal Register 45	40090	2	Float	Floating Point
Internal Register 46	40092	2	Float	Floating Point
Internal Register 47	40094	2	Float	Floating Point
Internal Register 48	40096	2	Float	Floating Point

6. I-7000 Module Data

This block stores all I-7000 modules I/O channel data. Each WISE-5800 supports up to 16 I-7000 modules. The starting Modbus TCP address of the data block is 140 and each I-7000 module takes 40 addresses. The Modbus TCP address of I / O channel of each module is in sequence arrangement from the starting address.

The following is an example of an I-7000 module using RS-485 Address 1:

Modbus TCP Address	I-7000 Module Data of RS-485 address 1			
	00000 (Coils Output)	10000 (Discrete Input)	30000 (Input Registers)	40000 (Holding Registers)
140 ~ 179	DO Channel Value	DI Channel Value	AI Channel Value & DI Counter Vale	AO Channel Value

I-7000 module Modbus TCP Address starts from different initial address, therefore the I/O channels Modbus TCP Address of the modules will also be different if it starts from different RS-485 address. To calculate the I/O channels Modbus TCP Address of I-7000 module, please follow the steps below:

- Get the RS-485 address of the I-7000 module
- Calculate the parameter **N** by the following format:

$$N = (I-7000 \text{ RS-485 address} - 1) \times 40$$
- Check the I-7000 module Modbus TCP Address Table to calculate the I/O channel Modbus TCP Address with **N** value for the I-7000 module.

According to I-7000 module RS-485 addresses, each module's N value is different. For example: The N value of I-7000 module with RS-485 Address 1 is $(1-1) \times 40 = 0$, the N value of I-7000 module with RS-485 Address 2 is $(2-1) \times 40 = 40$, the N value of I-7000 module with RS-485 Address 3 is $(3-1) \times 40 = 80$and the N value of I-7000 module with RS-485 Address 16 is $(16-1) \times 40 = 600$. The I-7000 module Modbus TCP Address Table is shown as below:

● **I-7011 、I-7012 、I-7014 (1 DI 、 2 DO 、 1 AI channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Coils Outputs, Unit : Coil(8 Bits)				
DO Ch.0	00140 + N	1	Byte	0=OFF, 1=ON
DO Ch.1	00141 + N	1	Byte	0=OFF, 1=ON
Discrete Inputs, Unit : Discrete Input (8 Bits)				
DI Ch.0	10140 + N	1	Byte	0=OFF, 1=ON
Input Register, Unit : Register(16 Bits)				
AI Ch.0	30140 + N	2	Float	By Channel Type Setting
DI Counter 0	30142 + N	1	Int	0~65535

● **I-7013 (1 DI channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Discrete Inputs, Unit : Discrete Input (8 Bits)				
DI Ch.0	10140 + N	1	Byte	0=OFF, 1=ON
Input Register, Unit : Register(16 Bits)				
DI Counter 0	30140 + N	1	Int	0~65535

● **I-7015 (6 AI channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Input Register, Unit : Register(16 Bits)				
AI Ch.0	30140 + N	2	Float	By Channel Type Setting
AI Ch.1	30142 + N	2	Float	By Channel Type Setting
AI Ch.2	30144 + N	2	Float	By Channel Type Setting
AI Ch.3	30146 + N	2	Float	By Channel Type Setting
AI Ch.4	30148 + N	2	Float	By Channel Type Setting
AI Ch.5	30150 + N	2	Float	By Channel Type Setting

● **I-7005 、I-7017 、I-7018 、I-7019 (8 AI channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Input Register, Unit : Register(16 Bits)				
AI Ch.0	30140 + N	2	Float	By Channel Type Setting
AI Ch.1	30142 + N	2	Float	By Channel Type Setting
AI Ch.2	30144 + N	2	Float	By Channel Type Setting
AI Ch.3	30146 + N	2	Float	By Channel Type Setting
AI Ch.4	30148 + N	2	Float	By Channel Type Setting
AI Ch.5	30150 + N	2	Float	By Channel Type Setting
AI Ch.6	30152 + N	2	Float	By Channel Type Setting
AI Ch.7	30154 + N	2	Float	By Channel Type Setting

PS: for different modules of I-7017 and I-7018, the numbers of channel might be different; the address of each channel will follow in sequences.

● **I-7021 (1 AO channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Holding Register, Unit : Register(16 Bits)				
AO Ch.0	40140 + N	2	Float	By Channel Type Setting

● **I-7022 (2 AO channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Holding Register, Unit : Register(16 Bits)				
AO Ch.0	40140 + N	2	Float	By Channel Type Setting
AO Ch.1	40142 + N	2	Float	By Channel Type Setting

● **I-7024 (4 AO channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Holding Register, Unit : Register(16 Bits)				
AO Ch.0	40140 + N	2	Float	By Channel Type Setting
AO Ch.1	40142 + N	2	Float	By Channel Type Setting
AO Ch.2	40144 + N	2	Float	By Channel Type Setting
AO Ch.3	40146 + N	2	Float	By Channel Type Setting

● **I-7024R (5 DI 、4 AO channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Discrete Inputs, Unit : Discrete Input (8 Bits)				
DI Ch.0	10140 + N	1	Byte	0=OFF, 1=ON
DI Ch.1	10141 + N	1	Byte	0=OFF, 1=ON

DI Ch.2	10142 + N	1	Byte	0=OFF, 1=ON
DI Ch.3	10143 + N	1	Byte	0=OFF, 1=ON
DI Ch.4	10144 + N	1	Byte	0=OFF, 1=ON
Input Register, Unit : Register(16 Bits)				
DI Counter 0	30140 + N	1	Int	0~65535
DI Counter 1	30141 + N	1	Int	0~65535
DI Counter 2	30142 + N	1	Int	0~65535
DI Counter 3	30143 + N	1	Int	0~65535
DI Counter 4	30144 + N	1	Int	0~65535
Holding Register, Unit : Register(16 Bits)				
AO Ch.0	40140 + N	2	Float	By Channel Type Setting
AO Ch.1	40142 + N	2	Float	By Channel Type Setting
AO Ch.2	40144 + N	2	Float	By Channel Type Setting
AO Ch.3	40146 + N	2	Float	By Channel Type Setting

● **I-7033 (3 AI channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Input Register, Unit : Register(16 Bits)				
AI Ch.0	30140 + N	2	Float	By Channel Type Setting
AI Ch.1	30142 + N	2	Float	By Channel Type Setting
AI Ch.2	30144 + N	2	Float	By Channel Type Setting

● **I-7000 DI/DO Module (Maximum 16 DI channel / 16 DO channel)**

According to the channel numbers of I-7000 DI/DO Module, you can look up the address of the I-7000 DI/DO Module channel from the following table:

Parameter Name	Modbus Address	Length	Data Type	Range
Coils Outputs, Unit : Coil(8 Bits)				
DO Ch.0	00140 + N	1	Byte	0=OFF, 1=ON

DO Ch.1	00141 + N	1	Byte	0=OFF, 1=ON
DO Ch.2	00142 + N	1	Byte	0=OFF, 1=ON
DO Ch.3	00143 + N	1	Byte	0=OFF, 1=ON
DO Ch.4	00144 + N	1	Byte	0=OFF, 1=ON
DO Ch.5	00145 + N	1	Byte	0=OFF, 1=ON
DO Ch.6	00146 + N	1	Byte	0=OFF, 1=ON
DO Ch.7	00147 + N	1	Byte	0=OFF, 1=ON
DO Ch.8	00148 + N	1	Byte	0=OFF, 1=ON
DO Ch.9	00149 + N	1	Byte	0=OFF, 1=ON
DO Ch.10	00150 + N	1	Byte	0=OFF, 1=ON
DO Ch.11	00151 + N	1	Byte	0=OFF, 1=ON
DO Ch.12	00152 + N	1	Byte	0=OFF, 1=ON
DO Ch.13	00153 + N	1	Byte	0=OFF, 1=ON
DO Ch.14	00154 + N	1	Byte	0=OFF, 1=ON
DO Ch.15	00155 + N	1	Byte	0=OFF, 1=ON
Discrete Inputs, Unit : Discrete Input (8 Bits)				
DI Ch.0	10140 + N	1	Byte	0=OFF, 1=ON
DI Ch.1	10141 + N	1	Byte	0=OFF, 1=ON
DI Ch.2	10142 + N	1	Byte	0=OFF, 1=ON
DI Ch.3	10143 + N	1	Byte	0=OFF, 1=ON
DI Ch.4	10144 + N	1	Byte	0=OFF, 1=ON
DI Ch.5	10145 + N	1	Byte	0=OFF, 1=ON
DI Ch.6	10146 + N	1	Byte	0=OFF, 1=ON
DI Ch.7	10147 + N	1	Byte	0=OFF, 1=ON
DI Ch.8	10148 + N	1	Byte	0=OFF, 1=ON
DI Ch.9	10149 + N	1	Byte	0=OFF, 1=ON
DI Ch.10	10150 + N	1	Byte	0=OFF, 1=ON
DI Ch.11	10151 + N	1	Byte	0=OFF, 1=ON
DI Ch.12	10152 + N	1	Byte	0=OFF, 1=ON
DI Ch.13	10153 + N	1	Byte	0=OFF, 1=ON
DI Ch.14	10154 + N	1	Byte	0=OFF, 1=ON
DI Ch.15	10155 + N	1	Byte	0=OFF, 1=ON
Input Register, Unit : Register(16 Bits)				
DI Counter 0	30140 + N	1	Int	0~65535
DI Counter 1	30141 + N	1	Int	0~65535
DI Counter 2	30142 + N	1	Int	0~65535
DI Counter 3	30143 + N	1	Int	0~65535

DI Counter 4	30144 + N	1	Int	0~65535
DI Counter 5	30145 + N	1	Int	0~65535
DI Counter 6	30146 + N	1	Int	0~65535
DI Counter 7	30147 + N	1	Int	0~65535
DI Counter 8	30148 + N	1	Int	0~65535
DI Counter 9	30149 + N	1	Int	0~65535
DI Counter 10	30150 + N	1	Int	0~65535
DI Counter 11	30151 + N	1	Int	0~65535
DI Counter 12	30152 + N	1	Int	0~65535
DI Counter 13	30153 + N	1	Int	0~65535
DI Counter 14	30154 + N	1	Int	0~65535
DI Counter 15	30155 + N	1	Int	0~65535

● **I-7080 (2 Counter/Frequency 、2 DO channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Coils Outputs, Unit : Coil(8 Bits)				
DO Ch.0	00140 + N	1	Byte	0=OFF, 1=ON
DO Ch.1	00141 + N	1	Byte	0=OFF, 1=ON
Input Register, Unit : Register(16 Bits)				
DI Counter 0	30140 + N	2	DWORD	0~4294967295
DI Counter 1	30142 + N	2	DWORD	0~4294967295

● **I-7088 (8 DI 、8 PWM Output channel)**

Parameter Name	Modbus Address	Length	Data Type	Range
Coils Outputs, Unit : Coil(8 Bits)				
PWM Output Ch.0	00140 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.1	00141 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.2	00142 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.3	00143 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.4	00144 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.5	00145 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.6	00146 + N	1	Byte	0=OFF, 1=ON
PWM Output Ch.7	00147 + N	1	Byte	0=OFF, 1=ON
Discrete Inputs, Unit : Discrete Input (8 Bits)				
DI Ch.0	10140 + N	1	Byte	0=OFF, 1=ON

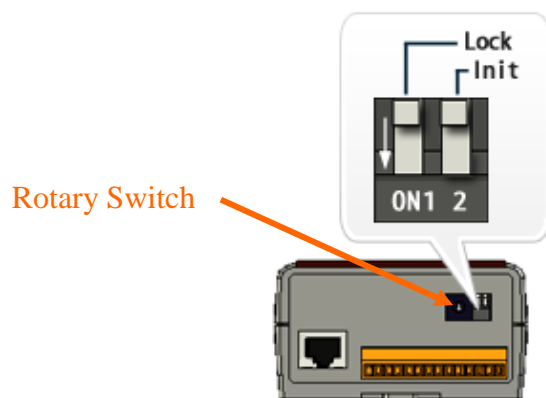
DI Ch.1	10141 + N	1	Byte	0=OFF, 1=ON
DI Ch.2	10142 + N	1	Byte	0=OFF, 1=ON
DI Ch.3	10143 + N	1	Byte	0=OFF, 1=ON
DI Ch.4	10144 + N	1	Byte	0=OFF, 1=ON
DI Ch.5	10145 + N	1	Byte	0=OFF, 1=ON
DI Ch.6	10146 + N	1	Byte	0=OFF, 1=ON
DI Ch.7	10147 + N	1	Byte	0=OFF, 1=ON
Input Register, Unit : Register(16 Bits)				
DI Counter 0	30140 + N	2	DWORD	0~4294967295
DI Counter 1	30142 + N	2	DWORD	0~4294967295
DI Counter 2	30144 + N	2	DWORD	0~4294967295
DI Counter 3	30146 + N	2	DWORD	0~4294967295
DI Counter 4	30148 + N	2	DWORD	0~4294967295
DI Counter 5	30150 + N	2	DWORD	0~4294967295
DI Counter 6	30152 + N	2	DWORD	0~4294967295
DI Counter 7	30154 + N	2	DWORD	0~4294967295

PS: the way to join the two registers value into DWORD is similar to Floating point; change the return value to DWORD or Unsigned Long.

Appendix II : Reset to Factory Default Setting

During the operation of WISE-5800, if the hardware system setting data is lost or encounters any abnormal problem that you would like to reset the system to factory default, please follow the steps below:

1. Power off the WISE-5800, make sure the Init Switch is in the “OFF” position.



2. Switch Rotary Switch to position 1 to restore to factory default, the position of Rotary Switch indicates:

Rotary Switch	Function										
0	Execute WISE-5800 firmware										
1	<ul style="list-style-type: none">● Restore Web Page display language to factory default (English)● Restore network settings to factory default <table><tr><td>IP Address</td><td>192.168.255.1</td></tr><tr><td>Subnet Mask</td><td>255.255.0.0</td></tr><tr><td>Gateway</td><td>192 168.0.1</td></tr><tr><td>Modbus TCP NetID</td><td>1</td></tr><tr><td>Port for Web Server</td><td>80</td></tr></table>	IP Address	192.168.255.1	Subnet Mask	255.255.0.0	Gateway	192 168.0.1	Modbus TCP NetID	1	Port for Web Server	80
IP Address	192.168.255.1										
Subnet Mask	255.255.0.0										
Gateway	192 168.0.1										
Modbus TCP NetID	1										
Port for Web Server	80										

Connect WISE-5800 to the power, when the L2 green light turns to be ON, it indicates that the setting is completed.



3. Power off WISE-5800 and switch Rotary Switch back to “0” position. Power on WISE-5800 again, the WISE-5800 will be restored to factory default settings.